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ABSTRACT

This test manual provides information on the development, characteristics, and use of the Individualized Instruction Inventory (III), a 64-item behavioral instrument designed to assess the extent to which community college instructors use individualized instruction in the classroom. The manual begins by providing a brief overview of the III, followed by background on individualized instruction and the character and purpose of the scale. The manual then describes the III's development and the nature and meaning of the eight independent factors it assesses: (1) systematic individualized learning activities and course design; (2) self-pacing; (3) life/career practical application; (4) student responsibility for achievement; (5) student involvement in learning; (6) learning contracts; (7) interpersonal student-teacher relationships; and (8) use of available school resources. A discussion of the use of the III and guidelines for self-administering and scoring the scale are followed by data on national III norms, based on scores from 1,012 community college instructors from 36 colleges across the country, and psychometric data on the III's reliability and validity. The final sections of the manual review recent research using the III and its concepts and commentaries on crucial elements of individualized instruction. References and the III are appended. (AYC)

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A MANUAL FOR THE INDIVIDUALIZED INSTRUCTION INVENTORY (III)

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The University of Texas at Austin

March 1983

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THE III IN BRIEF

The purpose of the III is to assess the extent to which community college instructors use individualized instruction in their classroom teaching. It assesses the extent of instructor usage of the following independent factors of individualized instruction: (1) systematic, individualized learning activities and course design; (2) self-pacing: flexible progress; (3) life-career practical application; (4) sense of student responsibility for achievement; (5) student involvement in instruction; (6) learning contracts; (7) interpersonal student-teacher relationship; and (8) use of available school resources.

Developed as part of a series of research projects, the III was recently revised and administered to a national norming sample of 1,012 community college instructors from 36 colleges across the country. It shows promise for individual and group diagnosis and prescription. It may not be appropriately used for screening or evaluation.

The III is a 64-item behavioral instrument which is self-administered and may be self-scored and interpreted. There is no time limit for completion, although it can usually be completed in less than forty-five minutes. The instrument is designed for manual scoring. It yields an overall score and individual scores for each of eight dimensions of individualized instruction.

A summary of research and literature supporting the dimensions of the instrument is presented, along with norming and psychometric data.

NATURE AND PURPOSE OF THE SCALE

Background

Individualized instruction has received increasing recognition in recent years as an important way to ensure successful learning for community college students, most especially those designated as nontraditional. These high-risk learners have been attracted by the open door admissions policies practiced at many community colleges (Cross, 1971). They may come from a lower socioeconomic level background, and a disproportionately high number of ethnic minorities are represented. They often suffer from feelings of powerlessness, low self-concept, and general feelings of unworthiness. They have experienced relatively little, if any, success in their educational endeavors (Roueche, 1972).

While such nontraditional students have been able to enter public community colleges, few have persisted there for more than a semester. Andrew Goodrich (1970), Minority Research Director of the American Association of Community and Junior Colleges, reported that the nationwide return rate of minority students to community colleges after one year is only one in nine.

Many institutions have attempted to improve service to nontraditional, low-achieving students by initiating remedial or developmental programs. National studies have indicated that such programs have generally been unsuccessful (Roueche, 1968; Roueche & Kirk, 1973). Some developmental programs have had high retention rates while students were in the programs, but attrition accelerated once the students returned to traditional classrooms.

It may be assumed that these students had not learned to cope with the mechanics of traditional classroom instruction. That is, they were unprepared to adjust to an environment where students are expected (a) to possess the necessary verbal skills to accommodate lecture-textbook approaches, (b) to learn at the same rate, (c) to be equally interested in the prescribed course content, and (d) to be self-motivated. Ehrle (1968), in a review of behavior modification approaches for disadvantaged youth, similarly pointed out that typical approaches to behavior modification or change-oriented teaching on the verbal level tend to fail. Verbal corrective efforts succeed because (a) students feel they are loved for themselves as a pre-condition to cognitive learning, (b) they possess verbal skills, (c) they have internalized controls over their behavior, and (d) they are motivated and will assume personal responsibility for changing their behavior as a result of insights gained. Since these assumptions often do not hold for high-risk students, the consequence is that their concept of themselves as failures is reinforced. They face an increasingly complex society with virtually no education or training, few salable skills, and one more failure experience on their record. It becomes apparent that improved teaching is needed in community colleges if they are to truly serve the nontraditional student (Mink, 1970).

These problems in coping are not just present in a small segment of the population, as shown in the recent, widely quoted study of adult functional competency. Some 23 million Americans, one-fifth of the adult population, cannot handle such routine tasks as shopping or reading the directions on a vending machine. Another 39 million barely get by, and less than half (46%) are actually proficient in dealing with the complexities of everyday living. These statistics become even more disturbing when it is considered that record numbers of people are entering higher education--close to 13 million in 1980. We invest more money and time in education than at any other time in history, and yet many of our citizens are functionally illiterate.

In an effort to prevent the open door from becoming a revolving door of easy-in, easy-out for nontraditional students, concerned community college educators have tried to develop or adopt innovative programs in an effort to provide the requisite developmental education. One such innovation is individualized instruction. This approach assumes that placing students at the center of learning activities, letting them progress through material at their own pace, and comparing their performance to an external criterion rather than to the performance of other students, they are more likely to succeed at school and to feel better about themselves. Cross (1976) described the speed of adoption of some form of individualized instruction in the United States as more revolutionary than evolutionary. Her 1974 survey showed that almost three-fourths of the community colleges report some use of individualized instruction, i.e., self-paced, self-contained learning units or modules with the goal of mastery learning. There are many variations of the basic concept, with as many different labels: modular instruction, minicourses, personalized system of instruction, audiotutorial approach, learning activity packages, programmed learning, individually prescribed instruction, individually guided instruction, competency-based instruction, and performance-based instruction. Common to every system is the use of behavioral objectives, mastery learning, feedback, learning units, and student participation.

It does appear then, that a learner-oriented instructional system is the most appropriate established teaching system for high-risk students--students who enter a college program with an array of deficiencies developed through years of failure or partial failure and who don't try because they don't believe they can succeed. The keys to the success of this system are several (Mink, 1977). They include systematic design of the total learning environment and provision for multiple levels of entry into carefully ordered instructional sequences. These sequences range from very simple ones to those which meet the performance standards or entry-level requirements of a given vocation or four-year institution. They also include intensive staff involvement with and commitment to the students both personally and in the form of administrative accountability. Another essential is a detailed analysis of the relationship between students' learning or work needs and the objectives of the instructional program. The final result is intended to be a highly effective and active learning environment capable of fostering the acquisition of complex knowledge and abilities and of maintaining high standards of competence.

Several studies have lent support to the usefulness of individualized instruction both in improving student achievement and in developing a more internally directed locus of control, shown to be correlated with a variety of positive personal outcomes (Appel, Roueche, & Mink, 1977; Appel, Roueche, & Mink, 1978; Roueche & Mink, 1976; Roueche & Snow, 1977). A review of research evaluating all the various forms of individualized instruction is beyond the scope of this manual. However, review of studies using the model of individualized instruction exemplified in the test instrument described in this manual will be made.

One important consequence of implementing individualized instruction is its impact on students' locus of control, alluded to above. The relationship between individualized instruction and locus of control has been investigated by Oscar Mink, John Roueche, and their collaborators over the past several years. Julian B. Rotter (1954, 1966; Rotter, Seeman, & Liverant, 1962) developed the concept of locus of control, also discussed in McLaughlin (1971). Briefly, people with an internal locus of control feel they can control the payoffs in their lives. They feel they have the skills, abilities, or characteristics to acquire the reinforcements which they value and desire. On the other hand, people with an external locus of control do not feel they have personal control of the payoffs in their lives. Other factors such as luck, fate, chance, or powerful others are seen as having more influence over their lives than they do.

One of the components of the current inventory pertains to development of an internal locus of control. Relevant items refer to the extent to which the instructor encourages students to recognize and accept personal responsibility for success and failure, and the extent to which the instructor actively works to help students believe that they can control the outcomes (rewards) in their academic lives. In this sense, individualized instruction subsumes the development of an internal locus of control. Consequently, the use of all components of individualized instruction should help to develop internality because of their stress on student self-direction. Due to this emphasis on student responsibility, individualized instruction also rewards students who are internal. Although the relationship between individualization and internality is by no means definitely established, research does indicate that a high internal locus of control or a low external locus of control relates to a wide range of positive academic and personal outcomes.

For example, internality has been found to be positively correlated with academic achievement (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966; Doane, 1973; Eilerson, 1972; Harrison, 1968; McGhee & Crandall, 1968; Nowicki & Roundtree, 1971). It is also significantly correlated with positive self-concept (Beebe, 1971; Fish & Karobenick, 1971; Warehime & Woodson, 1971; Wickersham, 1971), and a variety of other constructive outcomes including problem-solving ability. Conversely, externality has been shown to be positively correlated with anxiety (Feather, 1967; Joe, 1971; Lefcourt, 1966; Nelson & Phares, 1971; Ray & Katahn, 1968) and sometimes even to psychopathology (Cromwell, Rosenthal, Shakow, & Zahn, 1961; Harrow & Ferrante, 1969; Shybut, 1968; Smith, Pryer, & Distefano, 1971).

Individualized Instruction

Although many different teaching strategies use elements of individualized instruction, they all involve a system of individualized learner-oriented instruction designed for mastery. Based on general systems theory, individualized instruction makes certain assumptions about students and teachers (Mink, 1977).

1. Significant learning takes place when students perceive the subject matter as relevant to their own purposes.
2. Much significant learning is acquired through doing.
3. Learning is facilitated when students participate responsibly in the learning process.
4. Self-initiated learning that involves the whole person--feelings as well as intellect--is the most lasting and pervasive.
5. Independence, creativity, and self-reliance are all encouraged when self-evaluation is primary and evaluation by others is secondary.
6. The most socially useful knowledge in the modern world is learning how to learn, how to remain continuously open to the process of change.
7. The instructor/facilitator has much to do with setting the initial mood or climate of the group or class experience.
8. The facilitator helps to elicit and clarify the purposes of the

individuals in the class as well as the more general purposes of the group.

9. The facilitator endeavors to organize and make easily available the widest possible range of resources for learning.

10. The facilitator regards himself or herself as a flexible resource to be used by the group.

11. In responding to expressions in the classroom group, the facilitator accepts both the intellectual content and the emotional attitudes (Rogers, 1969), giving to each aspect the approximate degree of emphasis it has for the individual or the group.

In their work on fostering a positive self-concept and high self-esteem in the classroom, Coopersmith and Feldman (1974) identified a responsive environment as a key concept. The responsive environment concept draws heavily on the Montessori tradition and is based on the notion that the institution should be designed to respond to the learner rather than the learner to the institution. Nimnicht, MacAfee, and Meier (1969) describe the responsive environment as having five essential features. First, students are allowed to choose from among several activities. Second, activities are self-pacing; the rate of activity and progress is determined by each student. Third, the activities provide students with immediate feedback about the consequences of their actions. Fourth, teachers respond to students by giving assistance when they request it. And fifth, although the environment may permit free exploration and pacing, the teacher does establish the limits of that environment, the activities and materials it will contain, and the way it will be organized.

In a discussion of learner-oriented instruction in a therapeutic or work environment, Mink (1970) makes the point that in client rehabilitation in work adjustment, use of the systems approach, emphasis on mastery, and movement toward internal locus of control help to ensure both active involvement in learning and client success. It is important that all the criteria for total success in a given work adjustment program be explained and visible to the client. The means for determining criterion performance (performance standards) must be not only clearly defined but also objective and behaviorally stated. Each client is evaluated individually against the criteria. Clients' performances are never compared. The learning objectives are the same for everyone, but the amount of time needed to achieve the knowledge or skills required by the performance standards varies from client to client. Also important is the use of discrete instructional units arranged in steps from the simple to the complex. All these considerations are included in the model exemplified in the III.

Individualized instruction meets the requirements for a responsive learning environment. It includes the following components: a systems approach to instruction; a flexible time schedule to master course materials; student participation in determining the objectives to be mastered; use of all possible institutional support systems; and use of the instructor as manager of the course. Individualized instruction includes diagnosing the initial state of the learners and prescribing appropriate tasks and pathways that maximize their natural potential for learning. Cooperatively, learners and instructor (in the role of diagnostician-counselor) decide what to do and how. The learners then engage in the appropriate activities. Evaluation is used as feedback for the learners' self-appraisal, the validation of student achievement, and the continuous improvement of learning strategies (Hunter, 1970).

Framework for the Scale

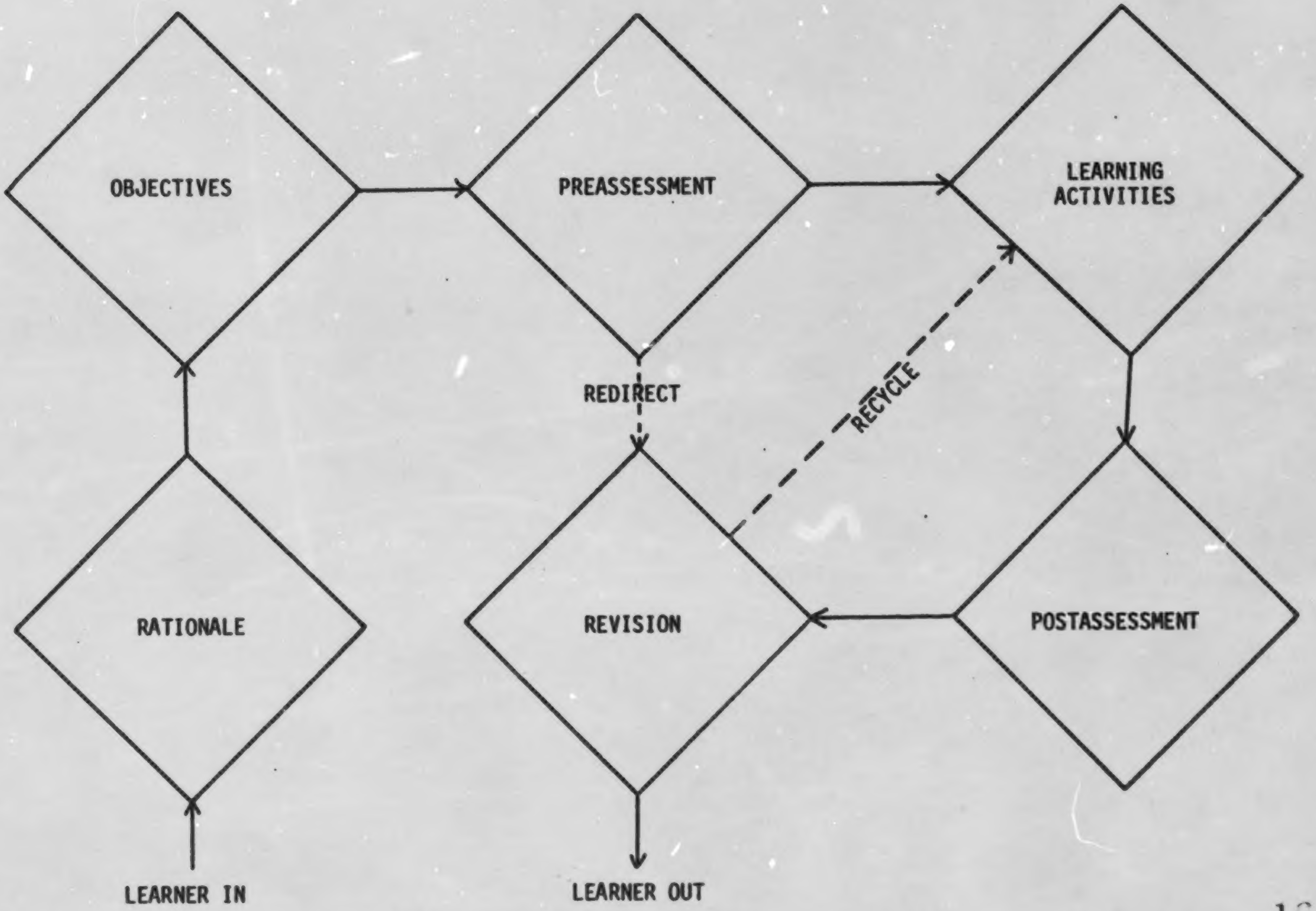
The instructional system used in the Individualized Instruction Inventory was based on the writings of Tyler (1950), Popham (1970), Banathy (1973), Moore (1970), and Kemp (1971). The specific model used was developed by Herrscher (1973) and Washburn (1975). The basic elements of this model are shown in Figure 1. They include a rationale, specific instructional objectives, preassessment, learning activities, postassessment, and revision. A systems approach enables the instructor to monitor and measure the degree of mastery (Bloom, 1973) over a given content and/or skill area.

Briefly examining each facet of the systems approach, students need to be provided with a rationale explaining why it is important that they master the course content. This rationale may be tied to reasons the student is taking the course. It may relate course content to actual on-the-job behavior. It may show how the course will prepare the student for success at the next course level. Objectives, in turn, serve as the foundation or cornerstone of any instructional system. They should be written in terms of student behavior. Objectives state what students will be able to do as a result of the instruction.

Another element of individualized instruction, preassessment, is necessary to determine the readiness of students to pursue the course objectives. This step is needed to determine (a) if students have the necessary prerequisite knowledge and skills to benefit from the instruction, (b) which, if any, of the stated objectives they can already perform, and (c) where they should be placed on the learning activities continuum. Learning activities are the vehicles used by students to move through the course or unit of instruction. Regardless of the approach used, it is crucial to provide students with

FIGURE 1

AN INSTRUCTIONAL SYSTEM


OBJECTIVES
PREASSESSMENT
LEARNING ACTIVITIES
REDIRECT
RECYCLE
RATIONALE
REVISION
POSTASSESSMENT
LEARNER IN
LEARNER OUT

explicit directions, learning modules, ample opportunity for student practice, and nonjudgmental feedback about their performance. Media should also be used in the learning activities.

A fifth major element of instruction is postassessment. This should be based on a criterion-referenced approach to evaluation. In criterion-referenced testing, as opposed to the more typically used norm-referenced testing, standards of acceptable student performance are established prior to the test. Each student's performance is compared against the standard, not against other students in the class. Typically students negotiate a grade or standard suitable to their objectives and attempt to achieve criterion for that standard.

The final element of a personalized system of instruction is course revision. Revision should be based on feedback from the students. Methods used in revision include examination of the error rate on tests, interviewing a small group of students to determine specific ways in which the instruction can be improved, assessing the adequacy of the criterion and performance attained, and blocking out all material in a given learning sequence not demonstrated as essential in meeting objectives.

In the development of the instrument, then, eight elements of individualized instruction are assessed altogether: (1) provision of specific instructional objectives to the learner, (2) building in of a self-pacing feature, (3) use of student tutors, (4) provision for preassessment based on objectives, (5) inclusion of a rationale, (6) provision of learning activities arranged in modular format with unit or modular completion required before moving on to the next most difficult unit, (7) inclusion of postassessment based on objectives, and (8) provision for revision.

The purpose of the III is to assess the extent to which community college instructors use individualized instruction in their classroom teaching. Surprisingly, the authors of the scale (Barbara Washburn Mink, Oscar G. Mink, and Irene M. Thorelli) were unable to locate any existing scales that might assess utilization of this innovation. Although individualized instruction has been used at least over the past ten to fifteen years, apparently no one has developed an instrument that might measure the extent of its implementation. This lack, combined with an interest in instructional and counseling strategies that might improve the achievement and satisfaction of the average community college student, led to the development of the scale.

The III is a 64-item behavioral self-report instrument which evolved from the instructional systems discussed above. It is self-administering for individuals or groups and is appropriate for self-scoring and interpretation as it requires little psychometric knowledge or sophistication. Developed as part of a series of research projects, the instrument was recently revised and administered to a national norming sample. It shows promise for both group description and individual diagnostic usage.

DEVELOPMENT OF THE INSTRUMENT

The developmental work on the III was initiated in 1973 as a component of a research project funded through the National Institute of Mental Health (NIMH). The purpose of the grant was to investigate the impact of instruction and counseling on high-risk students within the community college setting (Roueche & Mink, 1976). Within twelve southwestern community colleges, the project looked at the effect of the individualized instruction and internality counseling on several outcome measures, including locus of control and anxiety level. Over 800 students were used in different stages of the study, with a minimum of 336 for any one analysis. For the purposes of the study, an instrument was needed to assess the extent to which community college instructors were practicing individualized instruction in their classrooms.

Although an extensive search was made in the literature, no instrument was found that assessed use of individualized instruction. An instrument had to be developed. The original instrument was developed by Oscar G. Mink with primary inputs coming from Barbara Washburn and Bart Herrscher in 1974. The model used was that described earlier in this manual. Individuals around the country with expertise in individualized instruction were consulted regarding the essential components of individualized instruction, and items were solicited from them which would encompass these necessary areas. In addition, several items were adopted from the Coleman Report (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966), especially those pertaining to internal locus of control.

On the basis of these inputs, the Individualized Instruction Checklist (IIC) emerged (Washburn & Herrscher, 1974). It consisted of sixty-one items in a yes-no response format organized around eight essential components of individualized instruction. The first four of these components reflected the use of a systems approach to instruction. They included the use of specific objectives, appropriate testing (use of pretests, criterion-referenced tests, self-testing), appropriate learning activities (provision for frequent practice, use of several modes of learning--tutors, games, role plays--proper sequencing, and difficulty level), and course revision based on student input.

The fifth component of the IIC stressed the importance of a flexible amount of time for learning. If a student progresses faster or slower than the rest of the class, he or she has the option of finishing the course early or taking longer on each unit and completing the course the next instructional period. The sixth component included items relating to student involvement and quality of life. It included student-teacher contracting for grades, making the course relevant to the students, and providing students with a rationale for the course.

The seventh unit dealt with factors of institutional support. It included the availability of vocational and academic counseling and the use of an incomplete rather than failing grade. The last component comprised elements of course management. It included the instructor's belief that almost all students can master the course if given enough time and appropriate instruction. Also included was the opportunity for students to devise their own objectives or learning activities, as well as instructor perceptions of their role and their use of principles of instruction.

During the research project, IIC validity and interrater reliability were determined through pilot testing at a local community college. Subsequently, trained NIMH project staff members rated approximately 20% of the instructors in each of the developmental studies programs at participating schools. Those instructors also rated themselves and then the self-ratings and observer ratings were checked for reliability. A college was considered to be traditional in its teaching methods if less than one-half the items were answered in a positive direction. The colleges in which most items were responded to in the affirmative were considered to be implementing individualized instruction. Major results of the study will be presented in a subsequent section.

The IIC was next used in a project funded by the Office of Education, which focused on the impact of administrative climate, instruction, and counseling on control expectancy, anxiety, and completion rate of postsecondary educationally disadvantaged and minority vocational/technical students (Appel, Roueche, & Mink, 1977; Fisher, Linquist, Mink, & Roueche, 1979). This study was primarily an extension of the previous study. The effects of individualized instruction and counseling on student internality were still examined, but added to these was the effect of administrative climate. This time project staff decided to look at the more standard outcome measures of educational research--academic achievement rate and completion rate--as well as locus of control and level of anxiety.

Six southwestern community colleges were studied in the project. Several years prior to both research projects, the state involved had installed a massive program to train community college instructors in individualized instruction and procedures. More than half the community colleges in the state had participated during the five years prior to the beginning of the earlier NIMH study in specially tailored workshops and seminars sponsored by the state education agency, and state's coordinating board for higher education. These training efforts were designed to provide instructors with the necessary skills to individualize their course offerings. Early in the Office of Education project, visits were made to all six schools to assess the degree of individualized instruction practiced in each school.

In all six schools the faculty trained in individualized instruction methods were teaching in developmental studies programs. Developmental studies faculty members were asked to complete the IIC. The checklist was also completed by an observing staff person for two of the schools and the results were compared. Approximately 75% to 100% of these faculty members were interviewed and an estimated 50% were observed in teaching activities. To serve as a comparison and to provide a description of the individualized instruction practices in each school, a 20% sample of the general faculty was also asked to complete the IIC. Half the sample was chosen from vocational-technical faculty and the other half from academic faculty. A criterion score of 40 answered affirmatively out of the total 61 items was considered to reflect threshold use of individualized instruction.

Over 600 students participated in the study, with a minimum of 290 for any one analysis. Effects on the outcome measures were assessed for schools that received no intervention, the administrative goal-setting intervention, and administrative goal-setting as well as individualized instruction and counseling for internality. Results of the study will be presented later. Information on the use of individualized instruction was available from the 164 instructors who participated in the study. The eight components of individualized instruction were implemented in varying degrees across the sample. The components reported as most often implemented were adequate learning activities and appropriate course management. The components reported as least often implemented were institutional support and specific course objectives.

During this project a factor analysis of the IIC was performed. After a principal components analysis with varimax rotation was performed, ten interpretable factors emerged, many of which closely resembled the eight major components around which the IIC had been organized. These factors were: (1) Self-Pacing Feature (accommodation of students' previous learning and student learning rates), (2) Relevance (student awareness of and involvement in determining and achieving course objectives), (3) Learning Climate (student choice of learning strategies and provision of accurate feedback), (4) Instructor Provides Supportive Climate (relevance of course design and content to student needs), (5) Student Personhood Development (facilitation of a positive self-concept), (6) Course Design and Revision (student feedback critical to course development), (7) Flexible Progress (student practice and achievement of learning objectives), (8) Student Contracts (students may contract for course achievement levels), (9) Student Learning Styles (variation in the amount and type of student involvement with course content), and (10) Faculty Self-Image (instructor perceptions of role in the learning environment).

As partial validation for the conceptual model used in developing the IIC, the eight elements posited to exist in individualized instruction did in fact remain distinct when submitted statistically to the factor analysis described above. A comparison of the factors resulting from the factor analysis and the original components used in developing the IIC is given in the first two columns of Table 1. The first component, objectives, became the factor of Relevance. Virtually every item in the objectives component was positively correlated with the other items--they formed one dimension. Similarly, the

TABLE 1

Comparison of Conceptual Components and Factor Dimensions in Successive Versions of the Individualized Instruction Inventory

Original Conceptual Components	Factor Analysis based on Appel, Roueche, and Mink, 1977 (61 Items)	Factor Analysis based on Appel, Roueche, and Mink, 1978 (93 Items)	Factor Analysis based on Lengthening of the Instrument, 1979 (112 Items)	Final Revision of the Instrument, 1980 (64 Items)
Student Involvement (student contracts, provision of course rationale) --Moderate Use	Student Contracts --Low Use	Student Contracts	Student Contracts --Low Use	Learning Contracts --Low Use
Flexible Amount of Time for Learning --Moderate Use Appropriate Testing (use of pretests, criterion-referenced tests, self-testing) --Moderate Use Institutional Support (vocational/academic counseling, use of 'incomplete' grade) --Low Use	Self-Pacing Feature --Low Use	Self-Pacing and Self-Determination	Self-Pacing and Self-Determination --Low Use	Self-Pacing: Flexible Progress --Low Use
Appropriate Learning Activities (provision for practice, proper sequencing) --High Use	Flexible Progress (student practice) --Moderate Use			

TABLE 1 (continued)

Comparison of Conceptual Components and Factor Dimensions in Successive Versions of the Individualized Instruction Inventory

Original Conceptual Components	Factor Analysis based on Appel, Roueche, and Mink, 1977 (61 Items)	Factor Analysis based on Appel, Roueche, and Mink, 1978 (93 Items)	Factor Analysis based on Lengthening of the Instrument, 1979 (112 Items)	Final Revision of the Instrument, 1980 (64 Items)
Use of Learning Objectives --Low Use	Relevance (student participation in course objectives) --Moderate Use	Independently Pursued Objectives	Independently Pursued Objectives --Moderate Use	Systematic, Individualized Learning Activities and Course Design --Moderate Use
Course Revision Based on Student Input --Moderate Use	Course Design and Revision --Moderate Use	Course Design and Revision	Course Design and Revision --Moderate Use	Student Involvement in Instruction --Moderate Use
	Student Learning Styles (variation in student involvement in course content) --Low Use			
	Instructor Provides Supportive Climate (relevance of course content and design to student needs) --High Use	Rationale and Relevance	Rationale and Relevance --Moderate Use	Life/Career Practical Application --Moderate Use
		Use of Students in Instruction	Use of Students in Instruction --Low Use	Student Involvement in Instruction --Moderate Use

TABLE 1 (continued)

Comparison of Conceptual Components and Factor Dimensions in Successive Versions of the Individualized Instruction Inventory

Original Conceptual Components	Factor Analysis based on Appel, Roueche, and Mink, 1977 (61 Items)	Factor Analysis based on Appel, Roueche, and Mink, 1978 (93 Items)	Factor Analysis based on Lengthening of the Instrument, 1979 (112 Items)	Final Revision of the Instrument, 1980 (64 Items)
Course Management (instructor self-perceptions, use of principles of instruction --High Use	Learning Climate (student choice of learning strategies, use of feedback) --High Use	Systematic Organization of Course Content	Systematic Organization of Course Content --High Use	Systematic, Individualized Learning Activities and Course Design --Moderate Use
	Faculty Self-Image (instructor perceptions of role) --Moderate Use	Instructor Self-Identifying Behavior	Instructor Self-Identifying Behavior --High Use	Interpersonal Student-Teacher Relationship --High Use
		Utilization of School Resources	Utilization of School Resources --Low Use	Use of Available School Resources --Moderate Use
	Student Personhood Development (facilitation of positive self-concept) --High Use	Development of Student Success Expectancy	Development of Student Success Expectancy --High Use	Sense of Student Responsibility for Achievement --High Use
		Vocational/Academic Counseling Services	Vocational/Academic Counseling Services --Moderate Use	Life/Career Practical Application --Moderate Use

TABLE 1 (continued)

Comparison of Conceptual Components and Factor Dimensions in Successive Versions of the Individualized Instruction Inventory

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Note.

Those components or factors that split up into two factors in a subsequent version of the inventory are so indicated by the use of brackets. Similarly, those components that combined with other components to form just one factor in subsequent sersions are also indicated by the use of brackets. In those cases where a component or factor existed separately in one version but was divided into three or more factors in subsequent versions, or came into existence through the combination of items from three or more factors, this is indicated by means of an entry that does not have parallel entries across all versions of the inventory. Level of use of the various components and factor scales is also indicated in those versions where data necessary to determine level of use were available.

testing component evolved to the factor of Self-Pacing Feature. Learning activities became Flexible Progress. Revision of course materials and strategies became Course Design and Revision. Time for learning became part of the large Self-Pacing Feature factor, as did institutional support. Finally, course management divided into two dimensions--Learning Climate and Faculty Self-Image.

On the basis of the information gathered in these two initial studies, the IIC was revised by Washburn and Mink. New items were added to each of the factors that lacked sufficient items to ensure stability, bringing the total number of items to 93. To allow for future development of the instrument, the response format was changed from yes-no to a Likert-type scale ranging from 0 (not at all) to 5 (to a very great extent). This format can measure partial implementation of elements of individualized instruction and yields data that are more useful statistically. The revised instrument was entitled Creating an Environment for Learning: Personalized Systematic Instruction Inventory (Washburn & Mink, 1977).

This questionnaire was used in a subsequent project funded by the Office of Education which examined the installation and assimilation of educational innovations in vocational/technical programs in postsecondary institutions. The purpose of this third research study was to determine what characteristics of instructors, institutions, or an innovation itself are most related to the extent of adoption of an educational innovation (Appel, Roueche, & Mink, 1978). To review the study briefly, research and development efforts within the vocational education area have been aimed primarily at development of educational innovations to enhance these programs, but relatively little effort has been expended to investigate better means to disseminate and install these innovations within the field.

Simply stated, massive resistances are encountered in the potential use of any innovation. It will come as no news to faculty and administrators in postsecondary education that there are within their institutions formidable obstacles to innovation, however meritorious. Thus, it is of interest to determine what factors facilitate or inhibit the adoption of an innovation. Examining individualized instruction as the innovation, four sets of determinants were explored: the characteristics of the innovation user, the perceived characteristics of the innovation, perceived institutional variables, and objective institutional variables. Two outcome measures were used to assess the extent of use of individualized instruction by 68 vocational-technical instructors within eight southwestern community colleges. One measure was the Washburn and Mink questionnaire which was completed by the instructors themselves. The other dependent measure was the Level of Use interview, conducted by a project staff member with each instructor. Through a stratified random sampling procedure, the tested instructors represented all of the major vocational/technical program areas--industrial, secretarial, business, technical, and allied health. In addition, some 555 secondary subjects participated in the project, including other faculty, students, and administrative staff.

Looking at the distribution of scores in this study, considerable variability was again found in the degree to which the several components of individualized instruction were implemented. The areas of learning climate, instructor provides supportive climate, and student personhood development were most emphasized. Present to a much smaller extent were student contracts, student learning styles, and a self-pacing feature. These are similar to the results obtained earlier. In both studies, course management (here referred to as learning climate) was frequently used; institutional support (a part of the self-pacing feature dimension) was infrequently used.

In addition to the relative degree of implementation, the underlying dimensionality of the scale was assessed by means of a factor analysis using a principal components solution with a varimax rotation. Eleven interpretable factors were extracted, similar to the ten factors in the earlier version and the eight factors in the inital checklist. Since each version was different from the previous ones in terms of number of items and response format, no direct comparisons can be made. However, some analogies can be observed, and these analogies are listed in the second and third columns of Table 1.

The first factor, Development of Student Success Expectancy, had elements found in the earlier Student Personhood Development. The factor of Self-Pacing and Self-Determination was obtained in both studies. Independently Pursued Objectives closely resembles the earlier Relevance. Course Design and Revision was found in both studies. Instructor Self-Identifying Behavior was analogous to the previous Faculty Self-Image. Systematic Organization of Course Content was similar to the previous Learning Climate.

Considering the last four factors, Rationale and Relevance closely resembled the prior Instructor Provides Supportive Climate. Student Contracts was found in both studies. Vocational/Academic Counseling Services overlapped with the earlier Student Personhood Development. Finally, Utilization of School Resources overlapped with the earlier Faculty Self-Image.

Using results obtained in all three projects and instructors' feedback on unclear items, the authors developed a 112-item instrument. New items were added to each of the eleven factors which did not contain ten items. The new items were constructed to fit the factor theme. This scale (Washburn & Mink,

1978) was then administered to a sample of 805 community college instructors from ten colleges nationwide. On this occasion, teachers were encouraged to make any comments on the questionnaire that came to mind as they completed it. The purpose was to aid in shortening the instrument to its approximate original length while retaining the best set of items.

Considering the results briefly, the elements of individualized instruction most extensively implemented were the Development of Student Success Expectancy, Instructor Self-Identifying Behavior, and Systematic Organization of Course Content. Elements least thoroughly implemented were Self-Pacing and Self-Determination, Use of Students in Instruction, Student Contracts, and Utilization of School Resources. These results compare quite well with those obtained earlier. In particular, the high level of use of Development of Student Success Expectancy and Systematic Organization of Course Content, and the low level of use of Self-Pacing and Self-Determination and Student Contracts are identical to previous findings.

When the results were submitted to a varimax factor analysis, the items loaded on the same factors they had in the previous study. The order of importance of the factors in explaining the common variance was changed, but the factors remained intact. The only change was that Course Design and Revision split into two factors, with one factor containing three of the items and the remaining items loading on Independently Pursued Objectives.

At this point, a thorough and detailed revision of the entire instrument was undertaken by Irene M. Thorelli, and the final instrument was thus authored by Barbara Washburn Mink, Oscar G. Mink, and Irene M. Thorelli. It became clear that teachers resented the length of the scale, the repetitive nature of some of the items, the use of technical jargon, the lack of a response category indicating that an item was not applicable, and the inherent bias in the scale which implied that individualized instruction was the only correct way of teaching. Several methodological problems were also uncovered. The revision was based on these considerations, an extensive item analysis and evaluation of the factor structure, an examination of the results of earlier studies, and a consideration of the elements crucial to our model of individualized instruction. After revision the instrument was administered to a national sample of 1,012 community college instructors from 36 community colleges who served as the norming sample. Results will be presented in subsequent sections, as will the final scale of Individualized Instruction Inventory (III). Discussion of the development of the instrument and a presentation of the results of research studies conducted during its development was also made at the Adult Basic Education conference by Thorelli and Mink (1980b).

NATURE AND MEANING OF FACTORS

The Individualized Instruction Inventory contains eight independent factors or dimensions, each composed of an average of eight items. To apply the instrument appropriately, it is necessary to understand clearly the themes which underlie each factor. The primary loadings of each of the 64 items on the 8 factors are presented in Table 2. The results of the factor analysis form part of a separate study authored by Mink, Mink, and Thorelli (in preparation). A brief interpretation of each of the factors follows.

I. Systematic, Individualized Learning Activities and Course Design. This factor refers to the basic instructional strategy used in individualized instruction. The elements of the strategy include the development of a representative set of objectives, use of feedback and positive reinforcement, recognition of individual differences, and use of active participation and practice.

II. Self-Pacing: Flexible Progress. This factor refers to the important feature of student self-determination of academic progress. Students can proceed either at a faster or slower pace than the teacher has planned. Students can be exempted from a unit or course, or they can repeat a unit or complete a course the following term. There is a sense of self-direction.

III. Life/Career Practical Application. This factor focuses on the relevance of course content to the student's future career or vocation. Problem-solving pertinent to application of content is emphasized. Direct contact with a worker in an occupation of the student's choice is encouraged as part of the course.

TABLE 2

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
1. Instructor makes friends with students							.59	
2. Higher-level objectives used	.50							
3. Proper level of difficulty of reading	.26							
4. Instructor has good sense of humor							.42	
5. Students' opinion of content and methods valued					.67			
6. Instructor relates course content to goals and careers	.37							
7. Students asked to observe worker on the job			.65					
8. Instructor helps students experience success				.68				
9. New information used in course revision					.49			

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
10. Instructor distributes career materials			.67					
11. Provision for individual differences	.44							
12. Student responsibility for outcomes encouraged				.50				
13. Pretest may exempt unit study		.62						
14. Materials available at learning resource center								.39
15. Contracting for grades permitted						.77		
16. Academic counseling available								.17
17. Peer tutors used							.25	
18. Positive reinforcers used	.60							
19. Instructor enjoys teaching							.40	

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
20. Learning options available						.65		
21. Learning modules evaluated by students			.30					
22. Provision for student practice and participation	.49							
23. Students can devise own objectives					.29			
24. Unit and terminal objectives provided								.39
25. Instructor is a counselor							.59	
26. Development of a success expectancy encouraged				.75				
27. Course application stressed in problem-solving			.38					
28. Student input of topics used					.60			
29. Instructor consults audio-visual specialists								.51

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
30. Instructor discusses course-relevant careers			.61					
31. Meaning and rationale discussed early					.34			
32. Instructor is a motivator							.45	
33. Activities appropriate for objectives				.38				
34. Colleague observes and critiques class			.34					
35. Several group learning activities used			.39					
36. Tests can be retaken		.67						
37. Incomplete grade permitted		.47						
38. Simple to complex sequence of learning activities	.43							
39. Mastery levels or contracts negotiated						.86		

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
40. Varying times available to take tests		.66						
41. Objectives chosen from different domains	.51							
42. Vocational counseling available			.14					
43. Student can repeat course units		.70						
44. Early course finish permitted		.67						
45. Students must reach criterion on each unit	.47							
46. Instructor teaches how to develop learning modules			.31					
47. Positive self-concept development stressed				.62				
48. Environmental limits made clear	.53							

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
49. Student control of outcomes stressed				.62				
50. Student ratings used in evaluation					.33			
51. Students used as discussion leaders					.37			
52. Students asked to react to learning experiences					.47			
53. Course goals provided in writing	.40							
54. Immediate feedback given	.38							
55. Instructor consults specialists when designing activities								.42
56. Students asked to state career plans			.52					
57. Mutually agreed upon objectives permitted						.77		

TABLE 2 (continued)

Primary Factor Loadings Resulting from a Principal Components Solution With Varimax Rotation for the Norming Sample of 1,012 Instructors

Test Item	Factor I: Systematic, Individualized Learning Activities and Course Design	Factor II: Self-Pacing: Flexible Progress	Factor III: Life/Career Practical Application	Factor IV: Sense of Student Responsibility for Achievement	Factor V: Student Involvement in Instruction	Factor VI: Learning Contracts	Factor VII: Interpersonal Student-Teacher Relationship	Factor VIII: Use of Available School Resources
58. Students encouraged to help each other							.44	
59. Advisors made aware of course objectives								.35
60. Instructor is a tutor							.42	
61. Student self-evaluation possible	.47							
62. Objectives appropriate to learning level	.53							
63. Atmosphere of self-direction prevails		.57						
64. Development of student self-esteem encouraged				.56				

Note. A primary factor loading for an inventory item refers to the single factor on which the item had its highest loading. In almost all cases, the next highest loading was significantly smaller than the primary loading.

IV. Sense of Student Responsibility for Achievement. Locus of control is the central concept in this factor. Here the stress is on encouraging students to believe that they are responsible for success and failure. Students can control the rewards in their academic lives. That is to say, an internal locus of control is a central aim. Developing a high level of self-esteem and a positive self-concept in students is also a concern of the instructor.

V. Student Involvement in Instruction. This factor refers to the participation of students in both instruction itself and in course revision. Students are encouraged to devise their own objectives and learning activities. Student input is used both in selecting course content and in course revision. Students are invited to discuss their reactions to course learning experiences.

VI. Learning Contracts. This factor focuses on the power of students in determining grading policy. Students are involved in a contractual process of negotiating mastery levels with the instructor. Students are able to contract for the grades they wish to earn.

VII. Interpersonal Student-Teacher Relationship. This factor pertains to the human element of the classroom environment. Students are encouraged to make friends and assist each other. The instructor makes friends with the students. He or she is a motivator and a counselor and enjoys teaching.

VIII. Use of Available School Resources. This factor focuses on the use of specialists in the design and production of learning materials. Use is made of the learning resources center. In addition, advisors are familiarized with the instructor's courses and learning objectives.

USE OF THE INSTRUMENT

The Individualized Instruction Inventory is designed to assess the extent of use of individualized instruction. This includes both overall use, extent of use of each of eight major factors or dimensions, and ultimately the extent of use of each of 64 specific aspects of individualized instruction. This instrument may be used for descriptive or predictive purposes. It may also be used to diagnose areas of weakness in the use of individualized instruction. To appropriately apply the instrument, it is necessary to understand the themes which underlie each factor. This explanation was provided in the preceding section.

The most important restriction regarding the III questionnaire relates to the purpose for its use, as discussed above. The questionnaire was designed for and is intended to be used for diagnostic or descriptive purposes for personnel involved in assessing the extent of use of several aspects of individualized instruction. It should not be used for purposes of screening or evaluation, for two reasons. First, there is not a sufficient body of research evidence at present to justify exclusive or even predominant use of individualized instruction as a teaching method, even with nontraditional or high-risk learners. Indeed, it is probable that there will never be enough evidence to justify such use. There are simply too many complex variables involved to make any overall claims as to which method(s) to use. At best, particular aspects of each of several approaches may prove to be useful in one situation, and other aspects of the same or other approaches will prove to be beneficial in other situations. Even such relatively harmless concepts as behavioral objectives and positive reinforcement have been recently criticized by Glaser (1979). He notes that in the first half of this century, behavioristic stimulus-response theories of learning were in ascendance. Today cognitive psychology is the dominant theoretical force in psychological research on learning and schooling. In contrast to this scientific shift, much of the application of psychological theory currently going on in the schools represents the earlier behavioristic approach, such as behavioral objectives and positive reinforcers. Glaser notes the lag between research and application in this area.

The other reason why this instrument should not be used for purposes of screening and evaluation is that not all teaching environments allow for or provide for all the various elements of individualized instruction included in the inventory. For example, virtually no academic program permits students to move immediately into the next course if they finish a course early. Some institutions do not allow the use of "in progress" or "incomplete" grades. Some instructors are so overworked and overcommitted that it would be difficult for them to develop an individualized instruction course unless they had already developed it elsewhere. In addition, many institutions do not have the support services and school resources referred to in the inventory. These include a learning resource center, audio/visual specialists, and vocational counseling.

It may be tempting to modify one or more of the questionnaire items to better address a particular situation or need. However, even minor modifications could result in invalidation of the scoring and norming standards and possibly in misinterpretation of the results.

The standardization sample for the III consisted of community college and junior college instructors. Although the instrument should be applicable to instructors in other educational settings, all the data reported in this manual were obtained from instructors at two-year postsecondary institutions.

Interpretation of the data can only be as good as the respondent was conscientious in completing the III. Also, although a Not Applicable response has been allowed in the survey, its extensive use may indicate an unwillingness to state that one is not implementing a certain element of individualized instruction.

With consideration of these limitations and restrictions, it is highly likely that the III questionnaire will provide valuable data to those interested in researching and facilitating individualized instruction. Problems and questions should be addressed to the authors of this manual.

ADMINISTRATION AND SCORING

The III is essentially self-administering and requires no instructions other than those printed on the first page of the instrument. It can be administered in groups or individually. No special administrator skills are required. There is no time limit for completion of the instrument, although experience indicates that virtually all persons are able to complete it in less than forty-five minutes.

The III is designed for manual scoring. No special skills are required for the person scoring the instrument. With the new response of Not Applicable permitted, there should be no problem with missing data. However, if an item is omitted, or if it is indicated to be Not Applicable, then it is excluded from the analysis.

To obtain an overall index of individualized instruction usage, the scorer merely sums the circled scores for all items from 1 to 64. This yields a score indicating the level of individual instructor usage relative to other community college instructors by reference to the established norms, to be presented in the next section. Scores may range from 0 (no use of individualized instruction) to 320 (high level of use of all components of individualized instruction).

For diagnostic purposes, individual scale scores may be obtained. This procedure is highly recommended as a means of ascertaining the component areas of individualized instruction which are in need of improvement. These eight scale scores, each representing one of the eight factors, provide a useful description of the extent of implementation of individualized instruction, more detailed than the total scores on the instrument but not as detailed as the scores on each of the items. Scale scores have a variable range since each scale is composed of a slightly different number of items. The scales are scored as follows, with ranges included.

Scale 1: Systematic, Individualized Learning Activities and Course Design. Sum the circled numerical scores for items 2, 3, 6, 11, 18, 22, 38, 41, 45, 48, 53, 54, 61, and 62. Range from 0 to 70.

Scale 2: Self-Pacing: Flexible Progress. Sum the circled numerical scores for items 13, 36, 37, 40, 43, 44, and 63. Range from 0 to 35.

Scale 3: Life/Career Practical Application. Sum the circled numerical scores for items 7, 10, 21, 27, 30, 34, 35, 42, 46, and 56. Range from 0 to 50.

Scale 4: Sense of Student Responsibility for Achievement. Sum the circled numerical scores for items 8, 12, 26, 33, 47, 49, and 64. Range from 0 to 35.

Scale 5: Student Involvement in Instruction. Sum the circled numerical scores for items 5, 9, 23, 28, 31, 50, 51, and 52. Range from 0 to 40.

Scale 6: Learning Contracts. Sum the circled numerical scores for items 15, 20, 39, and 57. Range from 0 to 20.

Scale 7: Interpersonal Student-Teacher Relationship. Sum the circled numerical scores for items 1, 4, 17, 19, 25, 32, 58, and 60. Range from 0 to 40.

Scale 8: Use of Available School Resources. Sum the circled numerical scores for items 14, 16, 24, 29, 55, and 59. Range from 0 to 30.

It should be mentioned that with the scoring system used, an item omitted or indicated to be Not Applicable implicitly becomes an item with a response of zero. This treatment is justifiable on the grounds that if an instructor is in fact using an element of individualized instruction, he or she will indicate that by marking one of the response categories of 1-5. If an instructor omits an item or marks it Not Applicable, it is almost certain that he or she is not implementing the element described in the item, regardless of the particular reason for this lack of use. Exclusion of scales, omissions of items, or indications of Not Applicable ultimately mean that an item or scale is not being implemented at any level of use, and that is exactly what the inventory is designed to assess.

There may be rare instances where one might wish to exclude omitted items from the analysis. For example, the rules and regulations at a community college may be such that certain components of individualized instruction cannot be implemented there. This would typically apply in the case of Self-Pacing and Use of Available School Resources. If it is felt crucial to exclude items or scales from any analyses, the mean score obtained on a scale can be substituted for the missing or Not Applicable item within that scale. The mean score obtained on each of the remaining seven scales can be substituted for a missing or Not Applicable scale. However, it must be remembered that this inventory is not a test or any other type of evaluative device. So we do not see any real reason for adjustments of this kind.

One useful way to display the results obtained on the scale scores in the inventory is presented in Figure 2. The percentile score for a particular instructor (or the average score in a school program or for the community college as a whole) is graphed in comparison to scores obtained in the national norming sample. One percentile score is plotted for each of the eight scales and a table alongside the graph presents the raw scores. A similar display can be used for each item but will not be necessary for most purposes. The profile in the sample shows an instructor who involves students to a great extent in

FIGURE 2

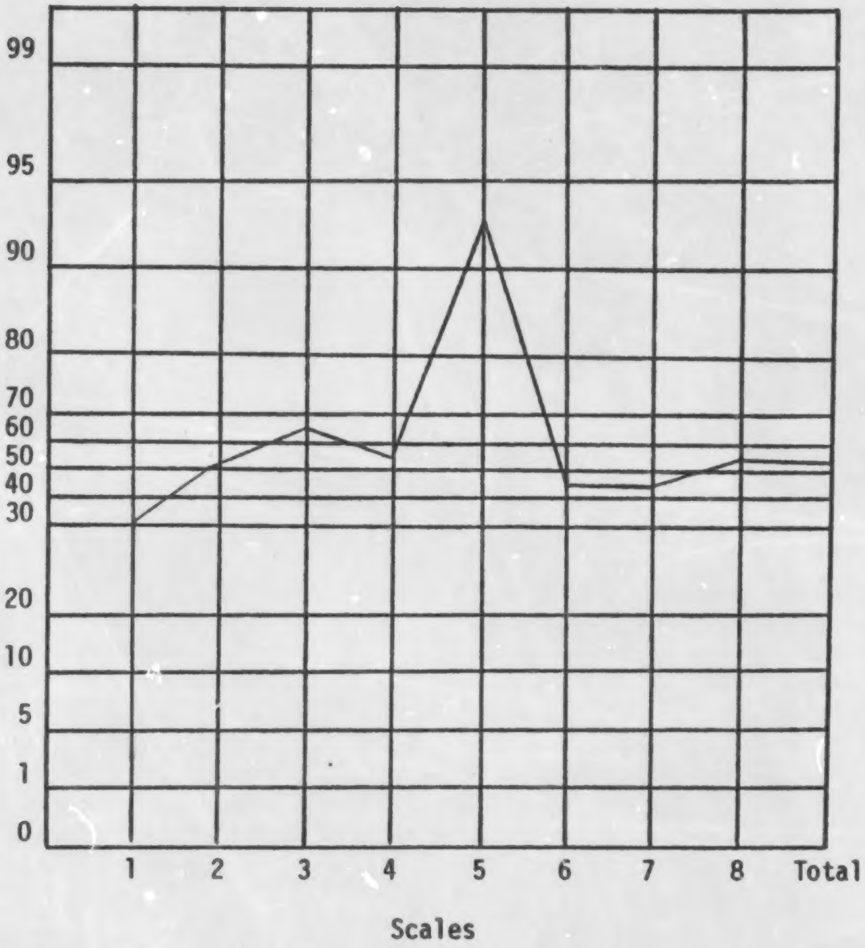
Sample of Score Profile

INDIVIDUALIZED INSTRUCTION INVENTORY

(Barbara Washburn Mink, Oscar G. Mink, and Irene M. Thorelli)

COLLEGE:______________ DATE:______________ INSTRUCTOR:______________ PROGRAM:______________

Factor	Raw Score	% Rank
1	44	31
2	13	53
3	24	64
4	30	55
5	35	93
6	0	42
7	29	42
8	15	53
Total	190	52



instruction and course revision, but who does not implement systematic, individualized learning activities and course design to a large extent. On other facets and overall, the instructor is an average user of individualized instruction.

NATIONAL NORMS

As was briefly mentioned earlier, a national norming sample of 1,012 community college instructors from 36 colleges across the country was used. Attempts to use stratified random sampling were partially successful. The sample was representative both in terms of characteristics of the colleges--geographical distribution, size of college, size of city in which college is located, vocational or academic orientation, and racial composition of the college--and in terms of the characteristics of the instructors themselves--sex, age, ethnicity, number of years of teaching experience, and type of program (vocational/technical or academic).

Norms have been derived for each of the 64 items of the III and also for the 8 scales and the total score. Table 3 presents the norms for each of the individual items. The results of this norming sample and the discussion of extent of utilization of the various components of individualized instruction of the III form part of a separate study authored by Mink, Mink, and Thorelli (in preparation) and presented briefly in Thorelli and Mink (1981a). The percentile is given for each of the six response categories. A percentile represents the percentage of the total norming sample whose responses fell below a certain numerical response.

The norms for the eight scale scores and the total score are given in Table 4. In this case, cumulative percentages are used, referring to the percentage of respondents in the norming sample who received either a certain score or any score below it.

As can be seen from both tables, certain elements of individualized instruction are uniformly well implemented, whereas other elements are hardly used at all. Looking at the individual items in Table 3, we can see a sizeable difference between responses to various items. There are several possible

TABLE 3

National Norms (Percentiles) for the Individual Items of the Individualized Instruction Inventory (III)

	Test Item	Percentile for a Score of					
		0	1	2	3	4	5
1.	Instructor makes friends with students	1	4	10	30	59	86
2.	Higher-level objectives used	4	12	18	34	62	89
3.	Proper level of difficulty of reading	8	20	27	45	72	93
4.	Instructor has good sense of humor	1	1	1	8	35	78
5.	Students' opinion of content and methods valued	2	7	13	33	63	89
6.	Instructor relates course to goals and careers	1	2	4	12	39	79
7.	Students asked to observe worker on the job	29	60	67	74	84	95
8.	Instructor helps students experience success	1	1	1	6	31	76
9.	New information used in course revision	1	4	7	19	44	80
10.	Instructor distributes career materials	18	41	50	63	78	93
11.	Provision for individual differences	3	9	17	36	65	90
12.	Student responsibility for outcomes encouraged	1	1	1	9	33	75
13.	Pretest may exempt unit study	29	64	73	82	91	97
14.	Materials available at learning resource center	20	44	52	65	78	92

TABLE 3 (continued)

National Norms (Percentiles) for the Individual Items of the Individualized Instruction Inventory (III)

	Test Item	Percentile for a Score of					
		0	1	2	3	4	5
15.	Contracting for grades permitted	34	72	78	86	93	98
16.	Academic counseling available	3	9	13	27	54	85
17.	Peer tutors used	13	32	46	66	86	96
18.	Positive reinforcers used	1	4	7	21	52	85
19.	Instructor enjoys teaching	1	1	2	2	12	61
20.	Learning options available	23	53	64	79	92	98
21.	Learning modules evaluated by students	25	56	68	80	91	97
22.	Provision for student practice and participation	1	1	3	10	32	74
23.	Students can devise own objectives	14	34	47	66	85	96
24.	Unit and terminal objectives provided	14	33	45	61	79	93
25.	Instructor is a counselor	1	2	5	18	46	82
26.	Development of a success expectancy encouraged	1	1	1	8	35	78
27.	Course application stressed in problem-solving	2	5	9	20	48	83
28.	Student input of topics used	6	16	27	47	73	92
29.	Instructor consults audio/visual specialists	9	23	32	50	72	91
30.	Instructor discusses course-relevant careers	21	47	57	69	82	94

TABLE 3 (continued)

National Norms (Percentiles) for the Individual Items of the Individualized Instruction Inventory (III)

Test Item	Percentile for a Score of 0	1	2	3	4	5
31. Meaning and rationale discussed early	5	12	19	35	58	86
32. Instructor is a motivator	1	1	2	9	37	78
33. Activities appropriate for objectives	1	1	1	8	38	80
34. Colleague observes and critiques class	18	41	52	68	83	94
35. Several group learning activities used	2	5	10	23	47	80
36. Tests can be retaken	14	34	45	60	76	91
37. Incomplete grade permitted	9	24	33	48	68	88
38. Simple to complex sequence of learning activities	1	4	7	19	46	81
39. Mastery levels or contracts negotiated	33	71	80	88	96	99
40. Varying times available to take tests	18	44	59	73	85	94
41. Objectives chosen from different domains	5	13	19	33	57	85
42. Vocational counseling available	7	16	23	37	62	88
43. Student can repeat course units	12	30	42	59	77	92
44. Early course finish permitted	34	73	79	84	90	96
45. Students must reach criterion on each unit	4	11	17	33	59	87

TABLE 3 (continued)

National Norms (Percentiles) for the Individual Items of the Individualized Instruction Inventory (III)

Test Item	Percentile for a Score of					
	0	1	2	3	4	5
46. Instructor teaches how to develop learning modules	28	62	73	85	94	96
47. Positive self-concept development stressed	1	1	4	15	45	82
48. Environmental limits made clear	4	10	15	30	57	86
49. Student control of outcomes stressed	1	1	3	13	41	81
50. Student ratings used in evaluation	11	26	32	46	68	89
51. Students used as discussion leaders	9	24	35	55	80	95
52. Students asked to react to learning experiences	2	5	10	23	50	83
53. Course goals provided in writing	7	15	21	33	54	83
54. Immediate feedback given	1	1	1	9	36	78
55. Instructor consults specialists when designing activities	16	38	48	65	84	96
56. Students asked to state career plans	24	53	60	70	83	94
57. Mutually agreed upon objectives	33	71	79	87	95	99
58. Students encouraged to help each other	1	2	5	15	41	79
59. Advisors made aware of course objectives	9	22	32	51	75	93
60. Instructor is a tutor	3	6	10	24	55	87

TABLE 3 (continued)

National Norms (Percentiles) for the Individual Items of the Individualized Instruction Inventory (III)

Test Item	Percentile for a Score of					
	0	1	2	3	4	5
61. Student self-evaluation possible	4	12	19	36	62	88
62. Objectives appropriate to learning level	2	6	10	24	55	87
63. Atmosphere of self-direction prevails	5	15	26	47	73	92
64. Development of student self-esteem encouraged	1	1	1	4	20	66

Note. The norming sample is composed of 1,012 community college instructors from 36 colleges nationwide, sampled in 1979. Approximately half the sample is male; the other half is female. Four-fifths of the sample is caucasion; one-tenth is black; and one-tenth is Mexican-American. Average age is 38 years. Average number of years of teaching experience is 9. Approximately half the instructors teach in academic programs; the other half teach in vocational/technical programs.

TABLE 4

National Norms (Cumulative Percentage) for the Eight Scales and the Total Score on the Individualized Instruction Inventory (III)

Scale	Scale Score for a Cumulative Percentage of									
	5	15	25	35	45	55	65	75	85	95
Factor I: Systematic, Individualized Learning Activities and Course Design	26	36	42	45	49	52	54	57	60	65
Factor II: Self-Pacing: Flexible Progress	1	4	7	9	11	13	16	19	23	30
Factor III: Life/Career Practical Application	6	10	13	16	19	21	24	28	33	39
Factor IV: Sense of Student Responsibility for Achievement	22	25	27	28	29	30	31	32	33	34
Factor V: Student Involvement in Instruction	10	15	18	21	23	25	27	29	32	35
Factor VI: Learning Contracts	--	--	--	--	0	2	3	5	9	14
Factor VII: Interpersonal Student-Teacher Relationship	21	25	26	28	29	31	32	33	35	37
Factor VIII: Use of Available School Resources	3	7	9	11	13	15	17	19	22	26
TOTAL SCORE	114	143	160	172	184	193	203	217	231	257

Note. Numbers in body of table represent scale scores obtained at 10-point cumulative percentage intervals. Total possible score for each scale follows: Factor I--70, Factor II--35, Factor III-50, Factor IV--35, Factor V--40, Factor VI--20, Factor VII--40, Factor VIII--30, Total Score--320. The norming sample is composed of 1,012 community college instructors from 36 colleges nationwide, sampled in 1979. Additional demographic information about the norming sample can be found in the Note in Table 3.

reasons for these differences. For example, use of certain elements may depend on the degree of institutional flexibility or constraint placed on the instructor. Other elements of our model are probably used by good instructors, no matter what their teaching ideology or strategy.

To take a specific example, most good teachers will encourage their students to recognize and accept personal responsibility for success and failure (#12). Similarly, most instructors provide for frequent practice and active participation by students (#22). On the other hand, the policy of an institution may prevent students from finishing a course before the end of the term and immediately starting on another course (#44). Similarly, if uniform departmental examinations are the primary means of course evaluations, then the instructor is not really in a position to contract with each student for mutually agreed upon objectives that will define standards of achievement and grade (#57). Nor will students be able to take course tests when they wish (#40).

Still other items reflect course practices that may be difficult to install in certain college settings, but that can be used if an instructor feels strongly that they are central elements. This set includes most of the items. For example, an instructor can ask that students study an occupation by observing a worker on the job (#7), although very few instructors go so far as to implement that aspect. Similarly, instructors can easily ask students to state career plans as a part of the initial course orientation, though few instructors do (#56).

Considering the eight factor scales of the III, it is equally clear that not all components of individualized instruction were reported to be used to the same degree by the instructors in the norming sample. The components most frequently espoused were Factor IV, Sense of Student Responsibility for

Achievement ($\overline{X}$=4.2 for each item); and Factor VII, Interpersonal Student-Teacher Relationship ($\overline{X}$=3.8). Components seldom used were Factor VI, Learning Contracts ($\overline{X}$=0.9); and Factor II, Self-Pacing: Flexible Progress ($\overline{X}$=2.0). Moderately well implemented components include Factor III, Life/Career Practical Application ($\overline{X}$=2.2); Factor VIII, Use of Available School Resources ($\overline{X}$=2.5); Factor V, Student Involvement in Instruction ($\overline{X}$=3.1); and Factor I, Systematic, Individualized Learning Activities and Course Design ($\overline{X}$=3.5).

Overall, the various aspects of individualized instruction were reported to have been used to a moderate extent. The total possible score was 320, and the average total score in the norming sample was 188, representing the sum of little use of some components and very high use of other components.

Results of subgroup comparisons on III scores will be presented in a subsequent section. However, it should be mentioned here that on several demographic characteristics, there are significant subgroup differences (Thorelli & Mink, 1981b). The variables examined were sex, ethnicity, age, years of teaching experience, and type of program. Surprisingly, we found few differences on the variables of age and years of teaching experience. There were significant differences for the variables of sex, ethnicity, and type of program. Females reported higher use of individualized instruction than males, minority instructors reported higher use than whites, and instructors in vocational/technical programs reported higher use than those in academic programs.

For purposes of determining norms, adjustments of a few points can be made, if desired, to take account of these differences. However, although differences were significant, the practical size of the differences is slight. With so large a sample, a difference of only two or three points on a scale score total will be statistically significant. Thus these differences will not seriously affect norms.

PSYCHOMETRIC DATA

Reliability

The reliability of each version of the III was determined. Split-half measures of reliability ranged from .82 to .92. On the final version of the instrument, several types of reliability analyses were performed. Initially, Cronbach's alpha, a measure of internal consistency, was assessed at .90. Subsequently, both forms of split-half reliability were computed. Using the equal-length Spearman-Brown formula, a reliability coefficient of .88 was obtained. Using the Guttman split-half formula, reliability was again measured at .88.

Validity

The content validity of the III has been established through the operational definition of individualized instruction provided by Washburn (1975) and Herrscher (1973). As discussed in the first section of this manual, the model used was based on the writings of several major instructional specialists, including Tyler (1950), Popham (1970), Banathy (1973), Kemp (1971), and Keller (1968). Other researchers and practitioners from around the country provided additional support for the approach we used. We also made use of the Coleman Report which found that elements of the internal-external locus of control dimension were crucial in accounting for the substantial differences in school achievement between rich and poor, black and white.

The basic model used in developing the III included the eight conceptual components of: (a) development of specific instructional objectives, (b) self-pacing feature, (c) use of student tutors, (d) preassessment based on objectives, (e) inclusion of a rationale, (f) provision of learning activities arranged in modular format with unit completion required before moving on to the next most difficult unit, (g) inclusion of postassessment based on objectives, and (h) provision for revision. Building on this conceptual base, the instrument was expanded and refined through the further delineation of concepts which emerged from a series of factor analyses and revisions.

Construct validity was established on a sample of 263 community college instructors from 10 schools. One-half the instructors were in vocational/technical programs and one-half were in academic programs. The validation sample was a subsample of the larger sample of 1,012 instructors used as the norming group.

These instructors completed the III and also participated in a semistructured half-hour interview designed to ascertain their level of use (LoU) of individualized instruction. The LoU interview, developed by Loucks, Newlove, and Hall (1976), is a technique that may be used with any innovation. In this case the innovation under scrutiny was individualized instruction. There are eight identifiable levels of use of an innovation, as defined by the LoU procedure. Each of these is characterized by stage-specific behavior. The levels range from non-use, orientation, and preparation at the low end to mechanical use and routine at the moderate level to refinement, integration, and renewal at the high end. Each subject is interviewed and his or her level of use is determined by an independent rater based on the information elicited by the interviewer. Psychometric data is available to support the use of the LoU as a measure of individualized instruction utilization (Loucks, 1977).

Interviewers and raters for the study were trained by the developers of the LoU. Construct validity for the III was determined through correlating the LoU total score and III total score. A Pearsonian correlation of .67

($p < .001$ was obtained. We believe this to be a solid indication of construct validity in light of the large difference in the methods of obtaining data, i.e., a behavioral self-report instrument versus a semistructured interview. Using a separate sample of 73 instructors, a correlation of 52 ($p < .001$) was obtained between scores on the III and ratings made by trained observers who observed the instructors for a total of ten hours in ten one-half hour sessions in their classrooms. In addition, using 67 instructors from the Appel, Roueche, and Mink (1978) study, a validation study was conducted for an earlier version of the instrument. Ratings of trained observers were again used. A correlation of .45 ($p < .001$) was obtained between the total III score and the total rating obtained.

Although it is always useful to have additional validation studies, we feel that for an instrument such as the III, the studies reported and the research studies discussed in the next section provide an adequate base for establishing its validity. It must be remembered that we are not dealing here with personality traits or deep psychological structures. Nor are we attempting to assess intelligence or occupational skills. The III is a simple, nonthreatening instrument designed to assess current use of one instructional model--a model particularly appropriate for open-door institutions, but still just one model. So there is little reason to think that instructors would want to deceive the administrator of the instrument. There is also little justification for assuming that instructors would not be able or willing to indicate whether or not they do certain things in their classrooms.

RESEARCH STUDIES USING THE III OR ITS CONCEPTS

The studies presented below represent research using either the III instrument itself or the conceptual model used in its development. The impetus for developing the III was the conviction of the original authors (Washburn, Mink, and Herrscher) that individualized instruction is a vital component of effective teaching, especially for nontraditional students attending community colleges. Thus, studies using individualized instruction or elements of the Washburn and Herrscher model lend credibility to the model, if desirable outcomes are obtained, i.e., if use of individualized instruction is shown to be effective in leading to one or more positive outcomes. The validity of the instrument is indirectly indicated as well by supportive findings in those studies.

Research on Internality

Internal locus of control has been found to be positively correlated with academic achievement, positive self-concept, and a variety of other positive personal outcomes, as discussed in an earlier section. Conversely, external locus of control has been found to be positively correlated with anxiety and sometimes even psychopathology. This section summarizes research sutides which used the III or its principles to measure the impact of individualized instruction on students' locus of control and academic achievement.

In the seminal NIMH study for the development of the III and the model on which it was based, Roueche and Mink (1976) investigated the impact of instruction and counseling on high-risk students within the community college setting. As mentioned in an earlier section, the project looked at the effect of individualized instruction and counseling for internality on several outcome measures, including locus of control and anxiety level. Using 12 southwestern community colleges and 336 students for the primary analyses, the study showed encouraging results.

The twelve schools were divided so that all combinations of traditional and individualized instruction and traditional and internality counseling were represented. Assessments on the dependent measures were made four months and eight months after the study began. When tested after two semesters of treatment, students who received both individualized instruction (as assessed by the IIC) and counseling for internality were much more likely to have increased in internality and/or have decreased in externality than the other groups. Reductions in anxiety were also found in the group receiving individualized instruction and counseling for internality after two semesters of treatment. These improvements were not found in any of the other three groups, which served as the control groups for the study. These other groups represent the more typical combinations of instruction and counseling used in community colleges.

In addition, it was found that individualized instruction had developed technically to the point where it could really make a difference in the lives of students, but was still a long way from being installed so that it was working efficiently and effectively in the community college. This was true especially in those programs that claimed to be implementing individualized instruction to a very high degree.

A pilot study was conducted in conjunction with the NIMH study just discussed. Roueche, Mink, and Abbott (1978) investigated the effect of individualized instruction on locus of control over the period of one semester. Although positive effects on both locus of control and anxiety required two semesters of treatment in the main study, this was not the case in the field test. Subjects were 126 developmental studies students in 18 different classrooms at a community college. Two instructional administrators at the school, both having extensive background in individualized instruction and using predetermined criteria (the eight elements of Washburn's and Herrscher's model), identified the classes they considered individualized. Students with enrollment in 50% or more of these classes were considered to be in the treatment group. Students not enrolled in these classes were considered the control group.

Results indicated that individualized instruction caused a shift toward internal locus of control. The average increase in internality was in excess of three scale points. There was also less variability in level of locus of control. With students who have a history of failures, individualized instruction, involving a certain amount of self-motivation and self-regulation, may lead some students temporarily to become more external, anxious, and uncertain. After a period of one semester, however, individualized instruction had a positive effect, helping students attain a more realistic control orientation.

Two other studies were based on the principles and basic design of the NIMH project. One study, directed by the dean of student development at a southwestern community college (Eckert, 1976), looked at the effects of counseling for internality and individualized instruction on high-risk students. Twenty-one academically suspended students were seeking permission to enroll for the fall term. These students were readmitted on the condition that they participate in a special project class meeting two hours a week for the semester. This class featured counseling for internality and individualized instruction.

When grade point averages of the 19 students receiving a grade in the class (2 withdrew) were compared to their grades during the preceding semester in college, significant differences were noted in the predicted direction. For the next fall, 20 other suspended students were readmitted to the college under similar conditions. At the time of writing, 16 of the 20 were passing the subjects in which they were enrolled. Counseling for internality and individualized instruction appeared to be viable techniques for both classes.

Mink and Watts (1977) describe a longitudinal pilot study investigating the cumulative effects of counseling and individualized instruction on the locus of control expectancy and success rates of high-risk community college students. Counseling for internality is sometimes referred to as reality therapy, based on the work of William Glasser (1969, 1972). Findings obtained support the hypotheses that control expectancy, achievement, and retention can be modified by instruction and counseling.

The study was conducted over a three-year period at a southeastern community college with a developmental studies program called the Advancement Studies Program (ASP). ASP uses the following as its underlying principles of operation: (1) to place the student at the center of the learning process by increasing learning activity options and providing opportunities for students to design portions of the curriculum, (2) to recognize and respond to individual differences in skills, values, and learning styles through a flexible curriculum that permits learning at different rates and in different ways, (3) to relate to students with openness and respect and to provide a supportive climate for learning, (4) to provide students positive reinforcement and opportunities for success experiences, (5) to provide a curriculum that will be experimental and process-oriented, (6) to provide an interdisciplinary approach to the teaching-learning process, and (7) to make the community an extension of the classroom.

As can easily be seen, these are virtually the identical principles underlying the III. Thus, the instructional techniques represented by the III were intentionally used in the study, and all eight components proposed by Washburn and Herrscher were implemented in the ASP. Counseling for internality was used as a supplemental strategy. ASP attempts to shift nontraditional students with external orientations to a more internal orientation. Through the individually styled instructional components and the reality-based counseling strategies, ASP hoped to produce students whose chances for success in school will be greatly enhanced.

In the study, 77 students entered the ASP program and were tested before and after the first and third quarters of the academic year. Several findings emerged. One was that as externality increased, grade point average decreased significantly, as expected. Second, 60 of the students in the ASP program completed the spring quarter, for a persistence rate of 78%. Of these, 40 (67%) were enrolled the following fall. These rates are substantially higher than the findings reported by Monroe (1972) for community college students in general. Also, more internally oriented students (77%) persisted in school than externally oriented (68%); rates for both groups were high. In conclusion, then, students in the ASP did persist in school, control orientation for many of them did shift toward greater internality, and their grade point averages improved with gains in internality.

The second large-scale project involving direct use of the III was the study funded by the Office of Education, discussed briefly with regard to the development of the instrument (Appel, Roueche, & Mink, 1977; Fisher, Linquist, Mink, & Roueche, 1979). This study investigated the impact of administrative climate (goal-setting), individualized instruction, and counseling for internality on control expectancy, anxiety, academic achievement, and completion rate of community college students.

Six southwestern community colleges participated in the study, including 310 developmental students and 290 nondevelopmental students. The retention rate of the students was the primary area of treatment success. In the control group, which had received no intervention at all, the dropout rate was almost one-third of all students. But for those students who received both the individualized instruction, counseling for internality, and administrative treatments, the ratio of dropouts was slightly less than one out of five, a highly significant difference. On other outcome measures, there was a slight shift in the direction of internality by nondevelopmental students who received all three interventions. There was also a strong positive relationship between internality and academic achievement. Finally, the vocational/technical programs receiving all three interventions did lead to shifts toward internality.

Research on Individualized Instruction

Implementation

The third large-scale project directly using the III was funded by the Office of Education. This study was briefly discussed in reference to the development of the instrument (Appel, Roueche, & Mink, 1978). It was aimed at determining what conditions account for the incorporation or resistance to incorporation of individualized instruction by community college instructors. As noted in the study, there are many variables relating to the characteristics of an innovation and the adopter or proponent that serve to influence the successful installation of even the most promising innovation (Havelock, 1973; Hefferlin, 1969; Rogers & Shoemaker, 1971). It is clear as well that successful installation and retention of an innovation cannot be carried out without active institutional support (Evans & Leppmann, 1967).

The project was conducted within eight community colleges using 68 vocational/technical instructors. The purpose was to predict use of individualized instruction among these instructors using a variety of independent or predictor variables. Use of individualized instruction was assessed by the III and the Level of Use interview discussed previously. There were four sets of independent variables--measures of innovation user characteristics, measures of the perceived characteristics of the innovation, measures of perceived institutional variables, and a measure of objective institutional variables.

The one independent variable that might be mentioned at this point is the Stages of Concern questionnaire developed by Hall, George, and Rutherford (1977). This instrument assesses the instructor's stage of concern about an innovation. The authors of the questionnaire contend that definite stages of concern exist and that these stages evolve in a logical developmental progression. Concern can progress from a stage of simple awareness to search for information, to personal and management concerns, and, at higher levels, to awareness of the consequences of the innovation, collaboration with others, and consideration of more powerful alternatives to the innovation.

Although individualized instruction was used extensively within the five traditional categories of vocational-technical instruction, the eight schools differed widely in their approach to individualized instruction. These differences were only in part the result of the size or rural-urban location of the institutions. In addition, instructors in different vocational/technical areas used the method differentially. Mid-management instructors used individualized instruction to the lowest degree, whereas electronics and vocational nursing instructors reported the highest level of use. These findings suggest that individualized instruction is perceived as more appropriate to some subjects than others. In addition, it was found that the use of individualized instruction was primarily mechanical and routine. Its adoption was at a consumer level rather than at the level of innovating on the innovation.

The study focused on illuminating the relationship between the two dependent variables--the III and the Level of Use interview--and four sets of independent variables, mentioned earlier. When the Level of Use interview was used as the criterion, seven predictor variables accounted for 50 percent of the variance. Five of the seven most important predictors were actor or innovator variables, and two were characteristics of the innovation itself. Surprisingly, environment variables emerged as significantly associated with the criterion measure. The most important predictor was the degree of concern about collaboration and cooperation with colleagues, the fifth stage in the Stages of Concern about an innovation.

The second emerging predictor was sex. Women were much more likely than men to be higher-level users of individualized instruction. In addition, the more the instructors participated in workshops or conferences on individualized instruction, the higher their level of use. Also, the greater the instructors' number of publications and professional contacts, the greater their level of use. These two measures were indices of what Rogers and Shoemaker (1971) have termed cosmopoliteness--the degree to which individual faculty members are invested in professional activities external to their collegiate institution. Instructors who perceived the innovation as easier to use and understand used it more than those who felt it was difficult to understand. However, it was also true that those who felt success was tied to installation over an extended period of time used the innovation more than those who felt it could be tested through a more limited trial period.

Looking at results obtained when the instructor-completed III was the criterion variable, actor variables were again very important. The best seven predictors explained 70 percent of the variance in the III, which was a very encouraging finding. As with the Level of Use interview measure, degree of concern about collaboration and cooperation with colleagues was the most important predictor. Also, if instructors valued their programs highly, felt others in their divisions also valued their programs highly, and felt that students had a lot of influence in their programs, they tended to say they were implementing individualized instruction to a great extent. In addition to these three significant predictors, three other variables were related to the criterion in the opposite direction from that originally expected. It appeared that the less instructors were concerned with learning about the innovation, the fewer number of years on the job they had, and the lower their level of education, the more they tended to report using the innovation. This finding may imply that innovation is attempted primarily by younger, less well-educated, and idealistic faculty who experience burn-out in later years.

Considering in a bit more detail the combined results, it appears that individuals amenable to the adoption of an innovation engage in higher levels of social participation and activity, achieve a higher level of integration within the social system, and tend to be more cosmopolitan in their outlook and associations. Innovative instructors can be characterized by a variety of relatively specific behavioral variables. These persons demonstrate a higher level of professional involvement (including holding office), engage in professionally relevant correspondence on a regular and ongoing basis, subscribe to a greater number of professional journals, and tend to produce more scholarly works. Based on the strong association found between innovative instructional practices and the instructors' belief that students should be influential in determining departmental functioning and policy, it would seem safe to assume that instructors use such innovative techniques in their attempt to be responsive to students and maintain a student-focused approach to the job of teaching.

Examining the relationship between the Stages of Concern questionnaire and use of individualized instruction, it was found that the two lowest stages of concern--awareness and informational--were strongly associated with low levels of individualization. Conversely, the higher stages of concern--consequence and collaboration--were strongly associated with high levels of individualization. These findings lent support to the external validity of the study.

As might be expected, instructors' beliefs and perceptions about individualized instruction were found to be important variables with respect to use of the innovation. A belief in the utility of the innovation, the perception of it as being a highly visible approach to teaching likely to be noticed by one's colleagues, and an experience of it as consonant or compatible with personal values were all predictive of a high level of use. The self-perceptions of instructors were also critical to use of the innovation. A tendency to perceive oneself as being invested in one's field and current with recent developments, as meaningfully involved in the process of departmental policy-making, and as being in the possession of strong leadership capabilities were all predictive of a high level of use. Also, a tendency to perceive one's program as highly valued and seen as worthwhile both by other instructors within one's division (vocational education) and by instructors outside one's division, and a tendency to perceive one's division as a valuable and worthwhile entity within the college were all positively associated with a high level of use of individualized instruction. These various results highlight the necessity of taking into consideration the instructors' sense of the worthwhileness of their instructional and professional activities, as well as their appraisal of the extent to which classroom efforts are valued by colleagues within the division and at the college as a whole in predicting the extent of use of individualized instruction.

Looking at the results of both measures of individualized instruction use, it is seen that the qualities of instructors themselves, as opposed to the qualities of the setting, are the predisposing factors most apt to account for those who do and do not manifest innovative behavior. Innovation is carried out by those who have the related expertise to do so, who are sufficiently secure with respect to their personal status and that of the program, and most importantly, who function at a high enough level that their concerns can focus upon finding better ways to collaborate with colleagues toward program improvement. In short, adoption of the innovation of individualized instruction is most likely to be initiated by those instructors functioning at upper levels of effectiveness. Other instructors may need more institutional support to encourage their adoption of the innovation.

Impact

In a recent study, Pallein (1979) evaluated modular instruction as compared to traditional instruction. Modular instruction utilizes a multimedia approach based upon behavioral objectives as a means of involving the student in a more active learning experience. The particular form of modular instruction used in Pallein's research was identical to the model of individualized instruction used to develop the III. The investigation was conducted within the nursing program at a western community college. The Department of Health, Education, and Welfare (HEW) had funded a seven-year project to implement modular instruction in nursing education at the college. Pallein's study formed part of the evaluation. Individual modules had been designed by faculty members for implementation in the two-year nursing program. Although the primary purpose of the study was to compare the effectiveness of modular instruction and traditional instruction in terms of student achievement, a secondary purpose was to examine teacher perceptions of modular instruction as a method of instruction.

Altogether 248 nursing students were used in various phases of the study. The graduating classes of 1976 and 1977 were taught using traditional instructional methods and the class of 1978 was taught using modular instruction. Comparing the achievement scores on the National League of Nursing Achievement Test, no significant differences were found in scores on obstetrical nursing or pediatric nursing between the groups taught by traditional or modular instruction methods. However, there was a significant difference favoring modular instruction for psychiatric nursing ($F_{2,\ 178} = 4.56$, $p < .01$). This difference was explained by the fact that some of the activities in the psychiatric nursing program had to do with the development of individual communication skills and interpersonal and group processes, areas that are closely related to the type of instructional approach used in modular instruction. These activities integrate nursing theory and practice throughout the four-semester program. Relevance to career goals is another central factor in individualized instruction. In addition, it was later found that community agencies utilized for clinical practice believed that the modular instruction class of 1978 had developed increased proficiency in performance of skills as compared to the previous traditional class. Subsequent findings also indicated that two students failed the state licensing examination from the modular instructional class, whereas six students failed the examination in the two traditional classes.

Teacher perceptions of modular instruction were also examined. For this purpose, the III was used, with minor modifications to make it directly applicable to modular instruction. For example, the phrase 'learning unit' was changed to 'learning module'. Questionnaires were sent to all 30 members of the nursing faculty. Twenty-four faculty members responded to the survey. Faculty response was strongly positive in the eight areas of modular instruction mentioned on the questionnaire. Means for all eight areas were near the positive end of the scale. The two areas with the highest mean response were student learning styles (variation is possible in the amount and type of student involvement with course content) and relevance (student awareness of and involvement in determining and achieving course objectives). The two areas with the lowest mean response were self-pacing (accommodation of students' previous learning and students' learning rates) and faculty self-image. It might be mentioned that students also expressed a generally positive attitude toward modular instruction.

Demographic Differences

As mentioned briefly in a previous section, there are significant differences in the utilization of individualized instruction among community college instructors with differing demographic characteristics, as shown in a study conducted on 805 instructors from 10 institutions on the longer version of the III (the version preceding the shorter form used in this study). Detailed results of this investigation will be published separately (Mink & Thorelli, in preparation), and are presented briefly in Thorelli and Mink (1981b). However, major findings and discussion will be presented here.

The 805 instructors were distributed as follows: 415 (52%) were in academic programs, 362 (45%) were in vocational-technical programs, and 28 (3%) were in recreational programs. Because of incomplete data, other background data were available only on subsets of the total sample, never less than 625 respondents per subset. Out of the 769 valid cases, 432 were male (56%) and 337 were female (44%), indicating an excellent representation of the sexes. Representation of ethnic groups was roughly proportional. Of the 680 valid cases, whites totaled 539 (79%). Of the remaining 141, one-half were black, and one-half represented other minorities. Based on 682 valid cases, the average age was 39 years. Based on 681 valid cases, the average number of years of teaching experience was 9 years.

Of the demographic variables related to the use of individualized instruction, the most intriguing was sex. Overall and on six of eleven subscales, women consistently reported significantly higher use of individualized instruction than men. It will be remembered that sex was found to be the second best predictor of level of use of individualized instruction (using the LoU interview) in an earlier study (Appel, Roueche, & Mink, 1978).

Performing a one-way analysis of variance, females ($\overline{X} = 317$) scored significantly higher than males ($\overline{X} = 305$) on their total score--the extent to which they used individualized instruction ($F_{1,767} = 5.25$, $p < .05$). Significant differences were also found in Development of Student Success Expectancy, Independently Pursued Objectives, Systematic Organization of Course Content, Student Contracts, Vocational/Academic Counseling Services, and Utilization of School Resources.

Comparing use of the innovation by different ethnic groups also gave significant results. Because there were many fewer minority than white instructors, the results are not as compelling as they were for sex. It was nonetheless clear that ethnic minorities used individualized instruction to a much greater extent than did whites. Overall differences were significant, with ethnic minorities averaging a total score of 323 compared to the white average of 309 ($F_{1,678} = 3.93$, $p < .05$). Significant differences were found on six subscales as well. Self-Pacing and Self-Determination yielded a significant difference, as did Independently Pursued Objectives, Use of Students in Instruction, Course Design and Revision, Rationale and Relevance, and Student Contracts.

Minor differences were found between groups of differing age and years of experience. As would be expected, there were significant differences in reported use among the various schools sampled and between different campuses within the same school. The programmatic factor was seen to be very important; more important, in fact, than any of the other demographic or background variables. There were highly significant differences ($F_{1,775} = 50.81$, $p < .00001$) between academic and vocational-technical instructors in use of the innovation, with vocational-technical instructors reporting much higher use ($\overline{X} = 329$) than academic instructors ($\overline{X} = 292$). Highly significant differences on each of the eleven subscales favored vocational-technical instructors each time.

A series of additional analyses was performed, among them a five-way analysis of variance on sex, ethnicity, age, years of teaching experience, and type of program. Sex, ethnicity, and program retained their importance in this analysis. In general, there were highly significant sex-by-race interactions. Minority males and white females indicated higher use of individualized instruction than white males or minority females. Significant sex-by-program effects occurred as well. Male vocational-technical instructors scored the highest of all groups, male academic instructors scored the lowest, and female instructors in both types of programs fell in between. Significant age-by-program interactions were primarily the result of low scores in the 33 to 37 year age range by vocational-technical instructors.

Although interpretation of the findings of the above study (Thorelli & Mink, 1981b; Mink & Thorelli, in preparation) will not be given here, a few comments are in order. The findings that women reported higher use of individualized instruction than men can be explained by assuming their behavior fulfills a feminine sex-role. Women appear to use a more personalized, individualized method of instruction in all senses of the word. They are involved in warmer, more personal relationships with their students. Looking at individual items, women encourage high self-esteem and the development of a positive self-concept in their students. They give students positive reinforcers for mastery of objectives and take into account individual differences in student self-direction. Students are encouraged to comment on their reactions to learning activities. The whole area of contract grading implies a close one-to-one relationship between the instructor and students, including renegotiations of the contract. What these subscales and items are pointing to is that the most positive part of the female stereotype seems to hold true, at least in this setting. Women are more conscientious and also more supportive, more personal, more giving, and treat students as individuals more than men.

Personal experience can account for the ethnic difference in behavior. It is speculated that the minority instructors' high level of use of the innovation was due to their special awareness of the difficulties many young people experience as they attend college without adequate preparation. It is probable that many of the minority instructors themselves experienced difficulty as they went through their college education and they therefore may empathize strongly with their students. This empathy and understanding would again translate into a more individualized course of instruction, where the instructor would arrange a plan with each student and do everything possible--self-pacing, contract grading, individual counseling--to ensure that the student was able to achieve some minimal mastery level.

Finally, the highly significant differences between vocational-technical instructors and academic instructors may be due to the influx of many high-risk or nontraditional learners into the community college system. Most of these students gravitate toward the vocational-technical programs where they will be able to best see the tangible results of their efforts and where they will have the greatest chance of succeeding. Motivations such as learning for learning's sake are probably not as relevant in this group of students as they might be for traditional academic students.

Vocational-technical instructors soon become aware of the capacities and abilities of their students. As this occurs, they tend to shift toward an approach such as individualized instruction whereby they can encourage students to develop as much as they can, taking full account of any weaknesses in their academic backgrounds and allowing flexibility in completion of course units.

RECENT COMMENTARY ON CRUCIAL ELEMENTS OF INDIVIDUALIZED INSTRUCTION

Although it is beyond the scope of this manual to establish the effectiveness of individualized instruction, it is of interest to note that much recent published work lends support to one or more aspects of the model used as a framework in the development of the III. Recent references from the field of educational research will be summarized here.

A crucial piece of recent research for the entire field of educational research has been the Beginning Teacher Evaluation Study (BTES). Although this investigation focused on teaching and learning in the elementary school, several of the major findings of the study lend support to some of the central tenets of individualized instruction. In the early 1970s, the Office of Economic Opportunity and later the National Institute of Education awarded a total of approximately five million dollars to the California Commission for Teacher Preparation and Licensing so that it might determine what makes teachers effective (Fenstermacher, 1979).

In an exploratory phase of the research conducted by the Educational Testing Service, McDonald and Elias (1976) correlated dozens of teacher and student variables. Subsequently, Fisher, Berliner, Filby, Marliave, Cahen, Dishaw, and Moore (1978) isolated a variable they call Academic Learning Time (ALT), the "amount of time a student spends engaged in an academic task that the student can perform with high success" (p. 2). Their research explores a model in which various teacher behaviors are thought to affect Academic Learning Time of students, which, in turn, is thought to be reflected in subsequent measures of student achievement. This approach differs from the more common strategy of investigating effects of teacher behavior on student achievement, an approach which ignores the intervening variable, Academic Learning Time. Scarvia Anderson, senior vice president of the Educational Testing Service, reiterates that "...of all the variables that we've found in educational research that make a difference in children's learning, the main one is time spent on tasks. If we give children two hours a day of language instruction, they are going to do better on language tests than if they get fifteen minutes a day of language instruction" (Bryan, 1979, p. 36).

The data for the study were collected in twenty-five second grade classrooms and twenty-one fifth grade classrooms over a one-year period. The fourteen central findings are divided into five pertaining to Academic Learning Time and student achievement and nine pertaining to instructional processes and classroom environment (Denham, 1979). Six findings seem to be relevant to the current model. For each of these six findings, items will be mentioned from our inventory that support the importance of whatever antecedent variable the finding indicates to be related to positive student outcomes in the BTES research. These variables thus form part of our model of individualized instruction, as exemplified in the items mentioned in conjunction with the BTES findings. One finding--the proportion of time reading or mathematics tasks provide a high success rate for a student is positively associated with student learning--finds its parallel in several items from our instrument. These include: "I work to encourage students to experience success," "I work to encourage students to develop a success expectancy," "Learning activities provide for frequent practice and active participation by students in the learning process (students may learn by doing)," and "Students are given positive reinforcers for mastery of objectives or subcomponents thereof."

A second major finding is that the teacher's ability to diagnose student skill levels is related to student achievement and Academic Learning Time. This is analogous to the items, "After consultation with students, behaviorally stated unit and/or end-of-course (terminal) objectives are developed and shared with the students in writing," "The objectives are appropriate to the current learning level or competencies of the individual student and his or her subgroup," and "I am a tutor and a diagnostician."

A third finding of the BTES research is that the teacher's ability to prescribe appropriate tasks is related to student achievement and student success rate. This compares with several items on our instrument, including "Learning activities are appropriate to the complexity or nature of course objectives," "The learning activities are sequenced from simple to complex," "Level of difficulty of reading material is appropriate to the students' reading skills," "The student is able to contract for the grade for which he or she wishes to strive, e.g., A, B, or C," and "Course goals communicating major conceptual and behavioral outcomes are provided in writing for the students at the beginning of the course."

A fourth finding is that academic feedback is positively associated with student learning. Items in our model that support the use of feedback are "Students are provided immediate feedback or knowledge of results of learning attempts" and "There is an opportunity for a student to evaluate his or her own achievement of objectives through self-testing, feedback, and self-correction of errors."

A fifth finding is that a learning environment characterized by student responsibility for academic work and by cooperation on academic tasks is associated with higher achievement. Here, there is a clear parallel to items in our inventory. The student responsibility aspect is tapped by questions such as, "I actively work to help each student to believe that he/she can control the outcomes in his/her academic life," "I encourage my students to recognize and accept personal responsibility for success and failure," "The student can control the information flow and repeat any portion not understood," and "Instructor makes provision for students to 'quest' or to move out on their own and personally devise objectives, activities, and resources--either individually or in groups." The aspect pertaining to cooperation on academic tasks is tapped by "Instructor uses peer tutors or peer counselors," "Instructor uses students as discussion leaders or laboratory assistants," and "Students are encouraged to 'make friends' and to assist each other."

A sixth finding--teacher emphasis on academic goals is positively associated with student learning--is exemplified in most of the test items already mentioned in reference to the remaining five relevant BTES findings.

In addition to this large-scale study of teacher variables and student achievement, references to various aspects of the model of individualized instruction examined in our scale can be found in many recent research studies and literature reviews. Instead of referring to particular test items, we will relate the main themes of the III instrument to research by other investigators.

One aspect of our model is the emphasis on student mastery of one instructional objective before passing on to the next objective or unit, using criterion-referenced instead of norm-referenced tests. Beard (1979) emphasizes the importance of mastery and criterion-referenced testing in the development of the minimum competency testing movement, a movement he strongly advocates as a result of his experience in measurement and evaluation in education.

In addition, Arnove and Strout (1980), in a review of research on alternative schools for disruptive youth, find that step-by-step mastery on tests of competence is a prime condition conducive to student success. In making recommendations to increase appropriate accountability in education, Ladas (1980) lists teaching for mastery as a crucial component.

In a recent large-scale study, Thompson (1980) compared individualized mastery to traditional instructional systems in course effects in college calculus. Individualized mastery emphasized unit mastery requirements and individual pacing, among other things. Both are part of our model. When compared with one of the most highly refined and carefully administered lecture-discussion-recitation systems in higher education, Thompson found that the individualized mastery system demonstrated achievement parity, lower failure rate, higher learning efficiency, and higher concurrent facilitation for other courses.

One of the reasons step-by-step mastery of material is so important is that it helps students gain confidence in their abilities. Medway and Love (1980) examined causal attribution for performance by tutors and those they tutored. One of the conclusions of their research stressed the importance of students making small achievements. If tutees do not show some real progress, tutors, and more seriously, tutees themselves, may come to believe that the tutees are, in fact, incapable of being taught. On the other hand, if lesson material is programmed such that tutees do show gradual and consistent progress, tutees are likely to attribute these actual outcomes to their ability with probable corresponding improvements in their self-esteem.

In a comprehensive analysis of the effects of instructional method on reading achievement, Pflaum, Walberg, Karegianes, and Rasher (1980) find significant mean effect sizes for studies comparing an individualized mastery system to traditional methods of reading instruction. As alluded to above, the former is a system where instruction and progress are monitored through mastery of skills. The study by Pflaum and her collaborators also finds that most systematic, specially designed, focused, and innovative methods--of which individualized instruction is a prime example--tend to produce more learning than most traditional instructional methods, partially due to the very systematization attendant to the use of any new approach. Finally, the study reports that the use of student-produced materials for reading instruction and independent reading and reporting on books yields improved reading achievement. This aspect is found in our item on the encouragement to students to devise their own objectives, activities, and resources.

The importance of teacher expectancy and feedback to the learning process are stressed in a study by Means, Moore, Gagné, and Hauck (1979) and by Hawley and Spencer (1980) in their listing of the Annehurst Curriculum Classification System (ACCS) directory of mathematical topics. Darley and Fazio (1980) discuss a variety of expectancy confirmation processes arising in social interaction. They allude to a series of studies that confirm that naturally occurring teacher expectancies are related to students' achievement. Teacher attitudes affected students' achievement to a greater degree than students' performance impinged on teachers' attitudes.

Hawley and Spencer (1980) also stress the use of learning activities and active learner participation in characterizing the motivation characteristics of curriculum materials. In a discussion of the cognitive movement in instruction, Wittrock (1979) notes that in this movement, learners have active roles in instruction and a new responsibility for learning. Active student participation and student responsibility are stressed in the inventory.

In their description of conditions found to be conducive to student success in alternative schools for disruptive youth, Arnove and Strout (1980) report that stress on enhancing self-esteem and positive self-concept, use of pretesting, use of learning contracts, and strong support services (including counseling and diagnostic services) have all been found to lead to students' academic success. Each of these variables is a part of our instructional model.

Arnove and Strout (1980) also advocate the use of positive reinforcement, something which is important in our model. In the case of disruptive youth, this takes the form of point systems or token economies which reward students for desirable classroom behaviors and progress toward specified academic goals. Kagan and Haveman (1979) emphasize the use of positive reinforcement to avoid the syndrome of learned helplessness in schools. In a similar vein, Sloane, Buckholdt, Jenson, and Crandall (1979) stress the importance of positive reinforcement to classroom management and instruction. These authors advocate use of behavior analysis for public school personnel. They discuss methods for choosing appropriate, tangible activity and social reinforcers. In a thorough review of research on extrinsic rewards and intrinsic motivation in the classroom, Bates (1979) finds that unambiguous social reinforcers directly related to task performance serve as motivators more than any other form of reward system. Social reinforcers include a smile, praise, or other forms of social approval. Finally, Doyle (1980) advocates the use of positive reinforcement in classroom management and discipline problems.

Examining other aspects of individualized instruction, Kraus (1980) notes that every form of individualized instruction includes some type of self-pacing to take account of differing learning rates of students. Sloane and his collaborators advocate the use of behavioral objectives as a central feature of structured teaching, which they claim is essential for classroom management and instruction in public schools inundated by handicapped children of various types. Anderson feels teaching and learning objectives are important in appraising the child's educational environment (Bryan, 1969). Each of these aspects of what other authors have considered to be or found to be elements of effective teaching can be found in our inventory.

In a thorough review of agency and achievement, Thomas (1980) concludes that giving students some degree of control over their learning and some sense of responsibility for their successes and failures can result in the continued disposition to achieve without sacrificing the essential goals of the "back to basics" movement. In other words, the prevalent view that effective basic skills instruction requires teacher-centered control and structure requires substantial modification and qualification. Provided that systematic procedures are followed for its implementation and a structured curriculum is provided for its maintenance, student-managed instruction has some important advantages over teacher-imposed control of instruction. These advantages include a more effective and individualized control of achievement-related and achievement-disrupting behaviors, a heightened sense of personal agency and personal effectiveness, and the possibility of a continued motivation to engage in learning activities. Conversely, to the extent that teacher-centered, teacher-controlled classrooms are characterized by external rewards, norm-referenced achievement standards, competitiveness, uniform goals, and an emphasis on achievement rather than effort, the result may be a cumulative depression of the affective and motivational prerequisites of academic achievement, at least for some students.

The finding that giving students some degree of control over their learning and some sense of responsibility for their successes and failures will result in a continued motivation to achieve is exemplified in our model's stress on internal locus of control and student responsibility. In a complicated aptitude-treatment interaction study, Greene (1980) similarly found that students with high ability or high confidence performed best in school when given some choice in the learning situation. In a survey about discipline responded to by 2,000 members of the American Association of School Administrators (1980), it was analogously found that schools that give students some responsibility in developing student conduct codes, and allowed them to serve in peer counseling programs (our inventory has an item pertaining to the use of peer counselors), often reported improvements in discipline problems. In the similar vein of emphasizing student self-direction and also including other teaching methods besides lecture-recitation--both stressed in the inventory--Peterson, Janicki, and Swing (1980) found that low-ability/high-anxiety students did best in an inquiry approach where they could work at their own pace and obtain help from teachers as needed.

Rutter, Maughan, Mortimore, and Ouston (1979) conducted a monumental study of 1,487 children and 219 staff members in twelve inner-city London schools over a 3-year study. Among other findings, it became clear that differences between schools in outcome measures were systematically related to several variables used in the inventory. In particular, these include the availability of incentives and rewards and the extent to which children were able to take responsibility and truly participate in the school.

Weiner (1980) presents a theory explaining the role of emotion in attributional approaches to human motivation. As one part of this theory, he notes that emotions can be reactions to causal attributions. The relevance of this to the current inventory lies in the related concepts of locus of control and student responsibility for success and failure. Giving specific examples in a learning setting, Weiner notes that causal dimensions play an essential role in emotional life. One such dimension is the locus of causality, or whether the cause resides within or is external to the actor. Thus, affects associated with self-esteem and self-worth require that the outcome be viewed as coming from the self. In other words, if a person has a strong internal locus of control, then there is a strong probability that he or she will experience a heightened level of self-esteem or self-worth. Internal locus of control is stressed in our inventory, in the scale of Sense of Student Responsibility for Achievement.

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APPENDIX

INDIVIDUALIZED INSTRUCTION INVENTORY

Barbara Washburn Mink, Oscar G. Mink, and Irene M. Thorelli

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INDIVIDUALIZED INSTRUCTION INVENTORY

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DIRECTIONS: This is a questionnaire designed to assess your use of individualized instruction in the classroom. No claim is implicitly or explicitly being made that individualized instruction is the best possible approach to teaching. This is only a measure of the extent to which you use this one particular method of instruction. Other methods of equal merit involve the use of specific techniques other than those presented in the items below. Thus, a certain score on this instrument has no one-to-one correspondence with teaching effectiveness or quality of teaching.

When reponding to the questionnaire, please answer each item independently. The items cover several distinct dimensions of individualized instruction. High implementation of one dimension does not imply high implementation of other dimensions. Most teachers report high use of some dimensions, medium use of others, and low use of yet others. Also, there may be techniques that you would very much like to implement, but haven't yet been able to, due to lack of time, lack of school resources, or conflicting administration policies. Although in such cases you should indicate that you do not use those techniques, it is also clear that virtually no instructor could implement each and every technique, even with adequate amount of time, school resources, or administrative support and permissiveness.

Please respond to each of the following statements by circling the number from 0 to 5 which most accurately represents your instructional practice where:

0 = NOT AT ALL
1 = TO A VERY LITTLE EXTENT
2 = TO A LITTLE EXTENT
3 = TO SOME EXTENT
4 = TO A GREAT EXTENT
5 = TO A VERY GREAT EXTENT

If you feel that an item is not applicable, i.e., cannot be practiced in your subject area, you may write in "N/A" next to the question. However, experience has indicated that only very rarely is a particular technique not applicable. More usually, it is either the teacher who is not implementing the technique or else the school administration that does not allow certain practices. In these cases, the answer "0" should be circled.

III - 2

0 = not at all
1 = to a very little extent
2 = to a little extent
3 = to some extent
4 = to a great extent
5 = to a very great extent

---

1. I make friends with my students. 0 1 2 3 4 5

2. At least one-half of the cognitive course objectives involve higher-level skills, such as synthesizing and evaluating. 0 1 2 3 4 5

3. Level of difficulty of reading material is appropriate to the students' reading skills. 0 1 2 3 4 5

4. I have a good sense of humor. 0 1 2 3 4 5

5. Information is gathered on the student's opinion of the content or the methods of instruction employed in the course and is used in course revision. 0 1 2 3 4 5

6. Effort is made to assist students in relating course content to future student goals and interests such as careers. 0 1 2 3 4 5

7. As part of course requirements, students are asked to study one occupation by observing a worker on the job. 0 1 2 3 4 5

8. I work to encourage students to experience success. 0 1 2 3 4 5

9. New information regarding course subject matter is used in revising the course content at least every two years. 0 1 2 3 4 5

10. Instructor shows film on careers related to course content or distributes vocational information booklets. 0 1 2 3 4 5

11. Provision is made for individual differences in student self-direction, student self-initiative, and student self-responsibility. 0 1 2 3 4 5

12. I encourage my students to recognize and accept personal responsibility for success and failure. 0 1 2 3 4 5

13. Based on pretest results, a student may be exempted from a portion of the unit objectives or an entire unit. 0 1 2 3 4 5

14. Materials I have developed are made available to students through the learning resource center. 0 1 2 3 4 5

15. The student is able to contract for the grade for which he or she wishes to strive, e.g., A, B, or C. 0 1 2 3 4 5

16. Academic counseling is available to students, including development of study skills or developmental reading. 0 1 2 3 4 5

17. Instructor uses peer tutors or peer counselors. 0 1 2 3 4 5

III - 3

____

0 = not at all
1 = to a very little extent
2 = to a little extent
3 = to some extent
4 = to a great extent
5 = to a very great extent

18. Students are given positive reinforcers for mastery of objectives or subcomponents thereof. 0 1 2 3 4 5

19. I enjoy teaching. 0 1 2 3 4 5

20. Students may select learning options. 0 1 2 3 4 5

21. Students are required to evaluate each learning module for its understandability, meaningfulness, and relevance. 0 1 2 3 4 5

22. Learning activities provide for frequent practice and active participation by students in the learning process. (Students may learn by doing.) 0 1 2 3 4 5

23. Instructor makes provision for students to "quest" or to move out on their own and personally devise objectives, learning activities, and resources--either individually or in groups. 0 1 2 3 4 5

24. After consultation with students, behaviorally stated unit and/or end-of-course (terminal) objectives are developed and shared with the students in writing. 0 1 2 3 4 5

25. I am a counselor. 0 1 2 3 4 5

26. I work to encourage students to develop a success expectancy. 0 1 2 3 4 5

27. Problem-solving relevant to application of course content is emphasized. 0 1 2 3 4 5

28. Student input of topics for subject content is included in the course design and/or revision. 0 1 2 3 4 5

29. I consult with audio-visual specialists regarding production and review of alternate learning materials. 0 1 2 3 4 5

30. Instructor discusses course-relevant careers or invites the counselor to visit the class to discuss career opportunities. 0 1 2 3 4 5

31. At the first class meeting, students are told how the course may be meaningful to them and asked to discuss and contribute to course rationale. 0 1 2 3 4 5

32. I am a motivator. 0 1 2 3 4 5

33. Learning activities are appropriate to the complexity or nature of course objectives. 0 1 2 3 4 5

III - 4

0 = not at all
1 = to a very little extent
2 = to a little extent
3 = to some extent
4 = to a great extent
5 = to a very great extent

34. I ask a colleague at my school to observe my classroom teaching and critique me at least twice each semester. 0 1 2 3 4 5

35. In addition to lecture, discussion, and reading, other group learning activities are employed, e.g., resource persons, audio-tutorial methods, films, role plays, games, field projects. 0 1 2 3 4 5

36. Students are allowed to re-study unmastered course objectives and re-take tests to attain mastery. 0 1 2 3 4 5

37. Students may receive an "in progress" or "incomplete" grade at the end of the institutional grading period and be allowed to continue working into a succeeding term to master course objectives. 0 1 2 3 4 5

38. The learning activities are sequenced from simple to complex. 0 1 2 3 4 5

39. Criterion-referenced mastery levels or grade contracts may be negotiated and modified through instructor-student negotiations. 0 1 2 3 4 5

40. Students are given the option of taking course tests at different times. 0 1 2 3 4 5

41. Objectives are written in at least two of the following domains: cognitive (mental skills), affective (feelings or attitudes), or psychomotor (manual skills). 0 1 2 3 4 5

42. Vocational counseling and standardized testing are available to students. 0 1 2 3 4 5

43. The student can control the information flow and repeat any portion not understood. 0 1 2 3 4 5

44. If a student finishes a course early, he or she is able to move immediately into the next course in the sequence or into another course of his or her choosing. 0 1 2 3 4 5

45. Students are asked to master or reach criterion on one unit before proceeding on to the next. 0 1 2 3 4 5

46. Students are taught how to develop learning modules. 0 1 2 3 4 5

47. Student development of a positive self-concept is stressed. 0 1 2 3 4 5

48. Environmental limits such as how many learning options are available or limits on the availability of materials are made clear at the beginning of the course. 0 1 2 3 4 5

0 = not at all
1 = to a very little extent
2 = to a little extent
3 = to some extent
4 = to a great extent
5 = to a very great extent

49. I actively work to help each student to believe that he/she can control the outcomes in his/her academic life. 0 1 2 3 4 5

50. Instructor uses student ratings as one part of the evaluation process. 0 1 2 3 4 5

51. Instructor uses students as discussion leaders or laboratory assistants. 0 1 2 3 4 5

52. Students are invited to comment on and discuss their reactions to course learning experiences. 0 1 2 3 4 5

53. Course goals communicating major conceptual and behavioral outcomes are provided in writing for the students at the beginning of the course. 0 1 2 3 4 5

54. Students are provided immediate feedback or knowledge of results of learning attempts. 0 1 2 3 4 5

55. I consult counselors and other specialists when designing learning activities or constructing test items. 0 1 2 3 4 5

56. Students are asked to state career plans as a part of initial course exercise or course orientation. 0 1 2 3 4 5

57. Students have a choice as to the content "their" course will contain by being allowed to contract with the instructor for mutually agreed upon objectives. 0 1 2 3 4 5

58. Students are encouraged to "make friends" and to assist each other. 0 1 2 3 4 5

59. I familiarize advisers with my courses and learning objectives, including any prerequisites. 0 1 2 3 4 5

60. I am a tutor and a diagnostician. 0 1 2 3 4 5

61. There is an opportunity for a student to evaluate his or her own achievement of objectives through self-testing, feedback, and self-correction of errors. 0 1 2 3 4 5

62. The objectives are appropriate to the current learning level or competencies of the individual student and his or her subgroup. 0 1 2 3 4 5

63. A general atmosphere of freedom (self-direction) for the student prevails in the classroom. 0 1 2 3 4 5

64. I think it is important to encourage students to develop self-esteem. 0 1 2 3 4 5

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